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THE REPUTATION OF THE HOTWELLS (BRISTOL) AS A HEALTH-RESORT.

BY

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WHEN I was Honorary Librarian of the Bristol Medical Library, I read before the Library Association a paper entitled "Some Things of General Interest in the Bristol Medical Library."[1] This contained much about the social and literary life of the Hotwells when it was a fashionable health-resort. Some passages from that paper are here repeated, and at the request of the Editor of this *Journal* I have added from the books to which reference was then made some matter which could not be mentioned when I read the paper before the members of the Library Association.

The reputation of the Hotwell water goes back to the middle of the fifteenth century, when it was mentioned by William Wyrcestre, who was a Bristol man. From the beginning of the seventeenth century the virtues of the Hotwell water

[1] *Library Association Record*, June and July, 1901.

have been proclaimed by various authorities, medical and otherwise. Dr. Tobias Venner of Bath, whose work,[1] published first in 1620, reached a third edition in 1650, said that the water "is in great request and use against the Stone." Venner had studied the properties and action of the water with much minuteness. In reference to the former, he states that "whatsoever minerals shall lie hid in the passages of this water, it is sufficient, that it partakes of two so good as Sulphur and Niter, and that in such a mixture, as it makes it to be of an excellent temper, and medicinable facultie in potable uses for divers cases."[2] He considered that the reputation of the water was certain to suffer because patients were resorting to it for objects other than "the drinking of it against the Stone," and that it should only be taken under the advice of a "judicious Physician." Without such guidance "the ill and preposterous use thereof will weaken the stomack, subvert the liver, annoy the head and brest, occasion Cramps, paine in the joynts, breed crudities, rheumes, coughs, Cachexies, the Dropsie itselfe, and Consumption."[3] Further emphasis is laid on the necessity of skilful counsel when sick folk were taking the water. Admitting its "excellent faculties," he regarded it as "very effectuall against the burning heat of the stomack, inflammations of the liver and reines, and adustion[4] of the humors, being taken with fine Sugar in this proportion, as a dram of Sugar or there about to a pint of the Water."[5] Venner seems to have had little difficulty in diagnosing "purulent ulcers of the kidneys and bladder, and ulcerations of the intestines;" and in these conditions the water, taken with the necessary expert caution, was good. He gives ten rules for its use in cases of vesical calculus. These refer—

(1) To the preparation of the patient, whose body was to be "exquisitely purged";

[1] *Via Recta ad Vitam Longam*, of the 1638 edition of which "A Censvre concerning the Water of Saint Vincents Rocks neere Bristoll" formed part. Of course, censure was used with the meaning which it had not then lost of "opinion" merely. Cf. *The Winter's Tale*, II., i. 36.

[2] P. 334. [3] P. 335.

[4] [This word is now obsolete. It signified a burning, and is allied to "combustion."]

[5] Pp. 335–6.

(2) To the taking of the water fasting;

(3) and (4) To the quantity to be drunk and the duration of the treatment, both of which matters were to be left to the judgment of the physician in charge of the case;

(5) To the temperature at which the water was to be taken, bearing in mind that it was not to lose the heat[1] which it possessed at the spring, and if it were impossible to take it in that way it was to be kept in a stone jug, which was to be heated in a kettle of hot water until it was as hot as the patient could take it. If it was kept it was likely to lose "somewhat of its sulphurous, but not anything of its nitrous quality";

(6) To the time of year when it might be used most advantageously, that being from the beginning of May to the middle of September;

(7) To the diet of the patient whilst undergoing treatment. This should be "slender," and dinner was not to be taken "till the greater part of the Water be avoyded, and the supper must bee alwaies lesse than the dinner, that the Stomack may be the next morning emptie for receiving of the Water againe";[2]

(8) To the necessity of not allowing the water to "abide in the body after the use of it";

(9) To the ages of the patients, who could be fit recipients of the water. It was to be given cautiously to children under twelve years of age, and not at all to those who had "entered within the limits of old age, because it will abreviate their life, *calorem innatum extinguendo*";

(10) To the idiosyncrasies of the patients, for on no account was it to be administered to "such as by reason of the smalnesse and straightnesse of their veines, cannot excrete and passe it away by urine." Neither was it to be given to "such as have cold stomacks, weake livers, feeble braines, and subject unto Rheumes; in a word, not to phlegmatick, nor to any that abound with crudities, or have a cold and moist habit of body: for in all such it will soone infringe the naturall heat, breed Rheumes, annoy the brest, occasion Cramps, and divers other infirmities."[3]

Venner concludes his directions by again dwelling upon the importance of "the advice and presence of a judicious Physician" in all cases. He thought little was to be gained from the external application of the water, although it "may somewhat asswage the Itch, mundifie[4] and palliat old Sores." It will be seen from these extracts that Venner was exceed-

[1] According to later observers, who had the Fahrenheit thermometer, this was about 76°. [2] Pp. 339–40. [3] P. 341.

[4] ["**Mundifie.** To cleanse." Cockeram's *English Dictionarie*. Fifth Edition. 1637.]

ingly careful about details, and probably on that account was a successful practitioner. He is no less precise in his directions about tobacco, which he added in "A Briefe and Accurate Treatise concerning the taking of the Fume of Tobacco, which very many, in these dayes, doe too too licenciously use. In which, the immoderate, irregular, and unseasonable use thereof is reprehended, and the true nature and best manner of using it, perspicuously demonstrated." He approved it "as necessary and profitable for the rheumatick, and such as are of a cold and moist constitution, and in cold and moist seasons, so as it be taken in congruent manner, that is, both moderately and seasonably."[1] Venner evidently felt keenly the competition of the irregular practitioner and apothecary; for, speaking of those who thought the combination of tobacco and sack might often render the services of the physician unnecessary, he deplored the fact that "very many of our people, in their sicknesse, expose their bodies to bee corrupted, I cannot say cured, to ignorant usurping Poticaries, and other base illiterated Empericks, who are (contrary to the Lawes) everywhere permitted to exercise Physick, to the dishonour of God, disgrace to the Faculty, hurt of our people, and shame of our Nation."[2] His love of detail led him to give those who affected tobacco ten precepts in the use thereof. In these and in his directions concerning the Hotwell water one cannot fail to be struck with the sublime confidence he had in his own judgment, and this must have made him a very acceptable attendant to patients who especially abhor any uncertainty in the opinions and practice of their doctor. Venner was buried in Bath Abbey, where is erected a tablet with a very eulogistic inscription, to the Latinity of which Dr. Thomas Guidott takes exception in some exceedingly quaint criticism.[3]

Dr. Thomas Johnson, in *Mercurius Botanicus*, published in 1634, stated that the water was of repute both inwardly and outwardly. In 1662, in Fuller's *Worthies of England*, it is declared

[1] P. 349. [2] P. 354.

[3] "The Lives and Characters of the Physicians of Bath," in *A Discourse of Bath, and the Hot Waters There. Also, Some Enquiries into the Nature of the Water of St. Vincent's Rock, near Bristol, and that of Castle-Cary.* Second Edition, 1725, pp. 189-91.

that "St. *Vincents Well* is sovereign, for *Sores and Sicknesses*, to be *washt* in, or drunk of," and the statement is made that "experience proveth that Beer brewed thereof is wholesome against the *Spleen;*" and it is related that Dr. Samuel Ward, of Sidney College, Cambridge, who "was afflicted with that malady, was prescribed the constant drinking thereof, though it was costly to bring it thorough the *Severn*, and *narrow Seas* to *Lin*, and thence by the River to *Cambridge*."[1] The Hotwells received its first royal visitor in 1667, when Queen Catherine, the wife of Charles II., after dinner in Small Street, drove to see the Avon Gorge and drank some of the water.[2]

A doctor who is known as Claromontius, which was probably a Latin version of an English name, visited the Hotwells, and in 1672 gave his experience of the water in a book entitled *De Aere, Locis, et Aquis terræ Angliæ.* Although he records its good effect generally in "the Gravel, and Obstructions of the Intestines," he did not get much personal benefit; the Waters "made him puke, and did not pass as they should do by Urine," and if this result did occur, there was a danger that they might "gripe the Bowels and cause Ruptures."[3] Verily, in the good old times the Hotwell Water was not a thing with which one could trifle!

Dr. Thomas Guidott, of Bath, writing in 1676, considered that the Hotwell Water "may be as effectual as *Tunbridge* Waters, in any Diseases that Water is proper for."[4] He published the results of an examination of the water which he had made with the help of Mr. Richard Millechamp, an industrious and skilful apothecary in Bristol. As Guidott recognised that the water had "a Name among the useful Mineral Waters of this Land,"[5] it is of interest to note the method which he took to verify this. A hogshead of the water was, by his direction, evaporated to three or four gallons by Millechamp, who finished it in an evaporating glass and sent the contents, nearly five and a half ounces, to Guidott. Four ounces proved on examination to be "a reddish ferrugineous Earth, somewhat resembling in Colour an Iron Ore,

[1] Part iii., p. 34. [2] A copy of the 1661 "Grant of the Hotwell to the Corporation of Bristol" is given in *Gloucestershire Notes and Queries*, 1884, ii. 223-4. [3] Quoted in Dr. George Randolph's *An Enquiry into the Medicinal Virtues of Bristol-Water*, 1750, p. 13. [4] *Op. cit.*, p. 141. [5] *Op. cit.*, p. 138.

but in Substance very light and friable, with a Mixture of a Lime-stone and somewhat, though much less in Quantity, more white." Guidott then describes his method of dealing with these: "Upon this *Non*-Saline Part, as I call it, to distinguish it from the Saline Part that constitutes the *Lixivium*,[1] being put into a Crucible and calcin'd, I observ'd, That the red Earth was not harder, but more friable, and lost its rusty Colour, becoming more blue; but the white being cold, and mixed with fair Water, did, upon the first Injection, hiss, and afterwards dissolve, leaving the Water white, and a Limy Residence in the Bottom of the Vessel I infused it in; and both white and blue, after Infusion, being dryed again, became very white and Limy. The other Part being Saline, imbibed into a *Lixivium*, I evaporated away to half a Pint, and setting it in a cool Place, found the next Morning it had shot into long small Stiria's[2] to the quantity of ʒiij. The remaining Part of the Liquor that did not shoot, I breath'd away, and had ℈i. of another kind of Salt;[3] so that the Saline Part is here much exceeded by the *non*-Saline, to which it seems to bear proportionably not much more than a 5th Part, and to be contained scarce twelve Grains in a Gallon."[4] From this examination Guidott judged the virtue of the water "to consist of Iron, a Nitro-Sulphureous Salt, and some Lime-stone," and concluded that there was very little of an acid because "neither the cold Water, nor a strong *Lixivium* made of the Salt, will either turn with Galls, or coagulate Milk; neither doth any Thing glebous[5] shew itself among the Shoots." Guidott thought so well of the Hotwell water that he "lamented that so *sanative* a Spring had not a better *Situation*, that so the Water

[1] ["**Lixivium**. Lye; water impregnated with alkaline salt, produced from the ashes of vegetables; a liquor which has the power of extraction."—Johnson's *Dictionary*.]

[2] ["**Stirious** [*Stiria*, L. an Icicle], hanging, or being in Drops like Icicles."—Bailey's *Dictionary*. Third Edition. 1726.]

[3] Of the exact nature of this which he reserved for further examination he says only: "To make it further evident, that this is Lime-stone, after the *non*-Saline part was well calcin'd with a strong Fire, in the Water of which I decocted Sulphur, which it did dissolve, and was precipitated with a fetid smell, both by distill'd Vinegar, Spirit of Vitriol, and Oyl of Tartar, in a considerable Quantity."

[4] *Op. cit.*, pp. 139-40. [5] ["**Glebous**. Turfy."—Johnson's *Dictionary*.]

might *expand* itself to the Formation of a *Bath*, which being most temperate in Heat, would be of greater use in all *Tabid*,[1] Emaciating and *Hectic* Diseases, than any other *Bath* in the *Nation* besides."[2] In his *De Thermis Britannicis Tractatus*, published in 1691, Guidott has a chapter, "De Thermis Bristoliensibus," in which he refers to the great value of the water in diabetes.

As the spring issued forth some twenty-six feet below high-water mark, the advantages of its health-giving properties were only obtainable with difficulty. In 1691 a cistern, rising above the level of the highest tide, was constructed to contain the water, but as this came out with much force—at the rate of from forty to sixty gallons in a minute—the arrangement was soon found to be unsatisfactory; and in 1695 a company made an agreement with the Merchant Venturers, who were lords of the manor, for the erection of a pump-room and other facilities for visitors. From this time its popularity grew rapidly, and was promoted by much further medical testimony. A Bristol doctor named John Underhill, practising in College Green, who Latinised his surname into Subtermontanus, published in 1703 a collection of cases[3] which had received benefit from the use of the water, and the records of which had been kept at the Well-house. The epistle dedicatory of his book is addressed "to the Right Worshipful Sir William Lewis, Knight, The Present Mayor, and to the Worshipful the Aldermen and Common-Council of the Well Govern'd City of Bristol," whom Underhill considered to be "an Archetype or Pattern for other Corporations." The water he considered to be "the true *Medela* in that fatal Dejection by Urine and dispiriting, the *Diabetes*, as appears by the *Autography* in the *Hot-Well* House." Underhill's picturesque style is sufficiently represented by his narrative of the classic and historic case of the Bristol baker whose recovery about the end of the seventeenth century from diabetes is recorded by so many of the writers on the Hotwells:

> "Mr. William Gaggs case of *Bristol Castle-Green*, a very Fat man, at his Prime, aged thirty-eight; he was seiz'd with so violent a *Diabeth*, that he made at least three gallons of very sweet Urine with a large quantity of Oil swimming

[1] ["**Tabid.** Wasted by disease; consumptive."—Johnson's *Dictionary*.]

[2] *Op. cit.*, p. 307. [3] *Thermologia Bristoliensis.*

thereon every Night, and could not sleep for either Drinking or Pissing, which in Six Days (his Appetite gone) so run off his Fat and Flesh that he was reduc'd to helpless Skin and Bones, left off by his Physicians (not sparing any Money) and given over by his Wife and Friends for a dead Man (several of his Neighbours then dying of the same Disease, not knowing the Water's Use) resolutely cast himself on God's Mercy and the *Hot-Well* Water (tho' ignorant of its Use) imploring his Friends to support him to the *Hot-Well*, as their last Cast of Kindness, which with Difficulty they perform'd, he fainting every Step and even in drinking the Water, yet to God's Glory and their Astonishment his Strength so came to him every Glass that he made them loose him, pretending to walk, which his Spectators despair'd of and believ'd not, tho' he returned home without Assistance only aided now and then with a Sip of His Holy-water Bottle, his Trusty Friend at a dead lift, the *Hot-Well* Water, which instantly vanquish'd his insatiable Thirst and stopt his Pissing, and so restor'd his deprav'd Appetite, that at his Return Home he eat a large and savoury Meal and by drinking the Water for some-time perfectly attain'd his former State of Health, in all Respects, living many years after."

If this satisfactory result was obtained by a single visit to the spring as seems to be implied in the record, it would have been well calculated to establish the reputation of the Water. Such a recovery would make Lourdes envious. Later historians relate the case with some variations. The intimation is represented by them as coming to the sick man in a dream; but Underhill, who I think is the first narrator of the case, says nothing of this. He gives the names and addresses of several other people who were said to have been cured of diabetes by the Hotwell water, the value of which had so impressed him that he says: "I'll advise such of the Poor that apply themselves to me on the *College-Green Gratis;* and to the rich that desire it *pro Nummulis*,

Qui caput, & stomachum supponere fontibus audent.
Hor. Lib. 1. *Epist.* 15."

Perhaps his local connections disqualified Underhill from being an impartial judge; in any case it is difficult to take him seriously when he says that the waters "will extinguish the Flame in all *Synochi*, and putrid, if not malignant Fevers: It is *Instar omnium*, the last and only Refuge in Hecticks, and Dyscrasy of Humours. It is of excellent merit, *a Capite usque*

ad Calcem, in all Cephalick Cases, and Ataxy of the Spirits, and Palsies, and other Impotencies; and, as to external Uses, it is a trusty Asylum in all left-off incurable Ulcers, Fistula's, and eroding Sores, if not Cancers."[1]

In 1706 Dr. Benjamin Allen instituted some experiments on the qualities of the water, and in *The Natural History of the Mineral-Waters of Great Britain*, published in 1711, he declared it to be "worth trying in Diabetes and where Warmth is useful, and Steel not proper, to make a Constitution firm, as in most Phthises of the Lungs, and wilting[2] Decays; and perhaps in common Hypochondriacal Cases."[3] Allen's analysis produced results which differed from those of Venner and of Guidott. He examined several samples, and in each of them he found that the water gave "a light Golden Yellow and clear with Nutgall, and a bright Claret-red from Logwood boil'd in it. It had so much Acidity, as not to bear Soap; no Liquor disturb'd it by Precipitation or Thickning; it is plainly from a Steam." He goes on to say: "For Matter that inriches it with this Steam; I considered the Rock from under which it proceeds, which is high and large, and this affords Marble in several Places, but near the Spring, a Stone which they burn for Lime; and in some parts a Stone, known by the name of *Bristol* Stone, being a sort of hard Sparr, where the Rock is stain'd with red. The Water not containing a Calcarious Salt, I examin'd the Sparry red part as likely to shew me the Mineral, which with, and without burning, I boil'd in Vinegar, and in the same Distill'd, and extracted a Tincture, as Chymists speak, or inrich'd the Liquor with a taste like white Vitriol, but not very full, tho' plain enough, and which with Nutgall, like that, turn'd a dirty-black: It seems to me to be a Product of Iron and Limestone. The Warmth, since the Rock only lets it out at the Side of it, and is so gentle, may be no Proof of a Sulphur. It appears that the Water contains not any gross Part, or Body of any of the Minerals, or Limestone, and is far enough from Lime VVater, yet

[1] Quoted by Randolph, 1750, p. 24.

[2] ["**Wilt**, *v. i.* To droop, lose energy.—*v. t.* To render limp or pithless. (Cf. Ger. *welk*, withered.)"—Chambers's *Twentieth Century Dictionary*. 1901.]

[3] P. 98.

hath a Vital Effect, plain enough in the Diseases that Lime-Water is us'd in; that the Medicinal part consists in a Gas, or Steam, and Impress from the Mine, whether the Minerals have any considerable Share in the Specifick Effects; whether the Aporrhoe[1] be stronger, according to the Firmness of the Stone; whether a Gas from the Iron be necessary, I leave to further Enquiry."[2]

In 1712 the water received a favourable notice from Sir Robert Atkyns, the historian of Gloucestershire, whose father was Recorder of Bristol from 1662 to 1682. He refers to "the Hot Well, famous for curing divers distempers, especially the diabetes," and to "a very cold stream at Jacob's Well, which is much esteemed for its wholesome waters."[3] In a communication presented to the Royal Society in 1723,[4] Dr. Edward Strother records his "Experiments on Bristol Waters," and concludes that "they are aqueo, salino, alcalino, cretaceo, aluminoso, cupreo, vitriolick, and their effects seem to confirm these experiments."[5]

In a work[6] published in 1725 Dr. J. Wynter recorded what he professed to be a comparison between the waters of Bath and Bristol, the latter of which he believed to consist "principally of *Chalk*, *Lapis Calcarius* and *Calaminaris*, and some lixivial Salt." Much of this is given in a very dogmatic form, as may be seen in the quotations given by Randolph in his *Enquiry*.[7] Wynter's views are summed up by Nott in his 1793 book[8] as looking upon "Bath water as a stimulant, Bristol water as a sedative." Randolph and Nott were both astonished that Wynter considered the water to be of service in dropsy.

Among the visitors about this time were the Duchess of Marlborough, the Duchess of Kent, Lady Diana Spencer, Lady A. Grey, Lord Romney and Sir D. Bulkeley. That the water was in general request is shown by an advertisement which Mr. Latimer, whose three volumes of *Annals of Bristol* are a storehouse of accurate information, quotes from the *London Weekly*

[1] ["**Aporrhoe**, a flowing down, or issuing from."—Bailey's *Dictionary*, 1726.] [2] P. 42. [3] *The Ancient and Present State of Glocestershire*. Second Edition, 1768, p. 187. [4] Mr. John Latimer's *The Annals of Bristol in the Eighteenth Century*, 1893, p. 139. [5] *Gloucestershire Notes and Queries*, 1884, ii. 240. [6] *Cyclus Metasyncriticus*. [7] Edition 1750, pp. 26-8, 147. [8] *Of the Hotwell Waters, near Bristol*, p. 18.

Journal of 30th April, 1726: "Bristol Hot Well water. Fresh from the wells, will be sold and delivered to any part of the town at six shillings per dozen, with the bottles, from Mr. Richard Bristow's, goldsmith, at the Three Bells near Bride Lane, Fleet Street. . . . These bottles are of the largest size, and by the extraordinary favour of the winds arrived but the last week in eight days from Bristol, the common passage being a month or six weeks." Dramatic performances for the amusement of the visitors were given in the Long Room, a building now used for a National School, and one of the representations of "The Beggars' Opera," in 1728, "was attended by 200 persons of the first rank." The actors had come from Bath, where the nobility had presented them with dresses, and it was announced that Mr. Gay would be present at the following representation. The place was, however, not free from calumniators. Richard Savage, who was buried in St. Peter's Church, Bristol, in August, 1743, had not hesitated to revile the city which had befriended him, and addressed it thus:—

> "What smiles thy sons must in their foes excite!
> Thy sons, to whom all discord is delight;
> Thy sons, though crafty, deaf to wisdom's call,
> Despising all men and despised by all;
> Sons, while thy cliffs a ditch-like river laves,
> Rude as thy rocks, and muddy as thy waves,
> Of thoughts as narrow as of words immense,
> As full of turbulence as void of sense."

And Alexander Pope, who came here for the benefit of his health in 1739, has not much to say in its favour, for he declares "there is no living at the Wells without more conveniences in the winter."[1]

Randolph says[2] that, according to Keir, who wrote in 1739, the water was "a compound of Nitre and *Sea-salt*, intimately united with a *calcarious Earth*;" but Nott,[3] whilst giving Keir credit for his method, looked upon his doctrines and opinions as obsolete. Shebbeare's experiments in 1740, to show that the water consisted "of Alum and Lime-stone, or rather Quick-lime

[1] Letter to Martha Blount. *A Supplementary Volume to the Works of Alexander Pope, Esq.*, 1807, p. 367.

[2] *Op. cit.*, p. 147. [3] *Op. cit.*, p. 18.

slaked," are briefly mentioned by Randolph and Nott, the latter of whom considered Shebbeare's deductions as unpardonable.

Some of the gay doings at the Hotwells in the season of 1743 are quoted by Mr. Latimer. The *Oracle* of 11th June of that year states, that on the previous Wednesday the Earl of Jersey gave a breakfast at the Long Room to 150 persons of high life, and that the Hon. Mr. Ponsonby offered a similar entertainment two days later. Public breakfasts, followed by a dance, were given once or twice weekly, and there were also evening balls, and in imitation of the familiar places of amusement in London, "a piece of ground near the Long Room was opened for evening dances, under the name of the New Vauxhall Gardens, the place being gaily illuminated."

The well-known *Enquiry into the Medicinal Virtues of Bristol-Water* by Dr. George Randolph of Bristol appeared in 1745. Randolph's book was the most ambitious and in many ways the most sensible of all the works that had up to his time dealt with the medical uses of the Hotwell water. He was much struck with "the many notorious Contradictions" of the writers who had preceded him, contradictions sufficiently obvious in the quotations I have already given; and freeing himself from the chemical mystifications of which they were fond, and considering that "Chymical Analysis" is by no means the proper method of procedure, and leaving it to subsequent investigation, looked at the effects of the water from a practical point of view. He doubts Venner's powers of diagnosis, is quite positive that it was not "good against the Spleen,"[1] thinks Guidott was much mistaken about the complaints for which the waters were suitable, ridicules Underhill's records in which the cases were signed by the patients and recognises "what a Medley of Conclusions may arise, when People are left to tell their own Case," and freely criticises all previous advocates of the water. Judged by the medicine of to-day, Randolph may perhaps be condemned with the others in being too easily led to think that many of the patients with serious diseases got well by virtue of the water rather than, as was undoubtedly the case, in spite of it; for his own opinion concerning it was:

[1] This is in opposition to the statement in Fuller's *Worthies*, quoted above.

"The *first* and principal Virtue is, that of tempering the bad Effects of hot acrimonious Blood; generally preventing, often curing, Inflammations and Hæmorrhage from this Cause; but more especially those of the Kidneys, Womb, and Lungs.

It has, *secondly*, been found of great service in Gleets of both Sexes, and other seminal and uterine Weaknesses; but it is more particularly famous for a Diabetes, in which it is deemed a Specifick.

Thirdly, It is a sovereign Remedy in a hectic Fever: It is a notable Preservative against the Stone, not only preventing Gravel from gathering, but powerfully discharging it when gathered; and is a friendly Drink in all inward Ulcers, but more especially those of the urinary Passages."[1]

The value of the spring is then considered under the heading of the several complaints in which it had been found beneficial. Randolph's examination of the water, which he records with great detail on many pages, led him to conclude[2] "that *Bristol* Water, and *Lime-water*, are two different Things," and that the Hotwell water was "a most pure light Water, as free from Recrements[3] as any Water whatsoever; which appears from its carrying uncorrupt round the whole World, and receiving no Alteration, as other Waters will, from hot Climates;" and that its virtues did not "depend upon any Imprægnation of the Water, but upon *imprægnated Air*, which it is very full of, as may be observed at the Pump, by the numerous Air-bubbles that are in it." Dr. Randolph, believing that in great measure he owed his life to this water, offered his book "as a *tabula votiva*, given out in Acknowledgement of the Escape" he had had, and he says in words that may be commended to many an intending author of to-day: "I know the World too well, to commence Author out of Interest; nor am I Fool enough to have any Vanity this Way."

Mr. Latimer records[4] that in 1745 on one of the country journeys to some of the city property "the officials provided themselves with a quart of rum and several gallons of wine, but

[1] Pp. 30-1. The quotations are made from the 1750 edition.

[2] Pp. 157, 173.

[3] ["**Recrement**, any superfluous thing, as dross, scum of mettals, dregs, or dross of perfume, that which is cut or pared away."—Blount's *Glossographia*. Second Edition. 1661.]

[4] *The Annals of Bristol in the Eighteenth Century*, 1893, p. 255.

their stock also included 'six bottles of Hot Well water,' which cost 1s. 6d."

The office of Poet Laureate has been held by many people whose names are well-nigh forgotten. One of these extraordinary creatures, William Whitehead, who received the appointment upon the death of Colley Cibber in 1757, after it had been refused by Gray, had six years before published an allegorical "Hymn to the Nymph of Bristol Spring," belauding the water in the most extravagant manner. It covers eighteen pages in the 1774 edition of his *Plays and Poems*. The author considered the neighbourhood to combine all the beauties of the several English health-resorts which he names.[1] Three years after the date of this poem there is much documentary evidence of the popularity of the Hotwells,[2] which is quoted in detail by Mr. Latimer. Keepers of fashionable shops at London and Bath opened branch establishments here. It is gratifying to our local pride to learn that in a literary direction Bristol set an example to Bath, where a shop was opened for ladies to read the newspapers "as at the Ladies' Tea Room at the Hotwells, at half a crown the season." In Owen's *Observations on the Earths, Rocks, Stones and Minerals for some Miles about Bristol, and on the Nature of the Hot-Well, and on the Virtues of its Water*, 1754, the statement is made that "no price is paid for the water: all the expence that attends the drinking of it, is, that every one, when he goes away, makes a present to the master, and a trifle to be divided amongst the servants."[3] In the same year some interesting light is thrown on social customs,

[1] Addressing Avonia, he says that the poets who seek inspiration in foreign beauty are to be blamed, "Thine is all beauty; every site is thine." The poem was favourably reviewed in the *Gentleman's Magazine*, January, 1751.

[2] Four of Shakspere's plays were performed at the Jacob's Wells playhouse in 1749. (*Gloucestershire Notes and Queries*, 1884, ii. 329.)

[3] P. 134. Of the works which deal with the Hotwells, Owen's book is one of the most interesting I have seen. Amongst other things he says:—

"The people in general are obliging more than in almost any other place I know. Every fine *Sunday* indeed the place is all day long like a fair, vast numbers coming from *Bristol*, and all round, to drink the water; but these go in a back way, and do not interrupt the better sort of company." (Pp. 125-6.) He says that the principal amusements for gentlemen are the river and channel excursions and rides on the Somersetshire side of the river, but of these ladies seldom partake. Their diversions are pretty much confined to the Pump-room

for we are told that "Elizabeth Trinder, from the Lebeck's Head Tavern, Bath, has opened a house at the Hotwells for the reception of company as a tavern or eating-house. An ordinary everyday at three o'clock, at half-a-crown a head . . . the house being the first of the kind attempted here." The house which was called 'The Lebeck' still bears the name, but during recent years it has been used by the Government as a Recruiting Office. A year later the Hotwell water was affected by the Lisbon earthquake. It became discoloured to such an extent that people thought the end of the world was upon them, and "flew to the churches, where prayers were offered to avert the apparent approach of their destruction."

In 1756 Dr. Charles Lucas published *An Essay on Waters*, in which is a section "Of the Baths, or Hot-well Waters, near Bristol." After a description of the charming scenery of the neighbourhood, he gives an elaborate comparative analysis of the three springs which had achieved a reputation more than local. These he calls the Old Hot-well, the New Hot-well, and the Mill-spring.[1] Mr. Latimer traces [2] the fortunes of the "new" Hotwell spring, at which John Wesley, in 1754, was a visitor because he preferred it to the "noise and hurry" of the older spring. The Mill-spring on the other side of the river furnished a cold supply, and was doubtless that copious flow which has been recently diverted. Lucas was led to his analytical view because there had been "great and irreconcileable diversities of opinion about the nature of the Bristol

and the Long-room. But some take great delight in riding upon Durdham-Down, and the best lady attending the Hot-well will not refuse riding behind a man, for such is the custom of the country, and numbers of what they call double horses are kept for that purpose. Owen says that at Bristol it was seldom necessary to drink the water under medical advice, as it was at Bath. Plainly speaking about doctors, he adds: "It were well if those gentlemens fees were all the ill that sometimes attends their officious service." (Pp. 135-6.) For medical men the fashionable life at the Hotwells does not seem to have been a very good thing: "Excepting for now and then a prescription for a bottle of drops to an old lady, or some salts to a fine gentleman who wants to soften his complection, the doctor seldom picks up many guineas." (P. 136.)

[1] The sites of all these are shown on the 1746 plan.

[2] *Op. cit.*, pp. 265, 463-4.

Hot-well water." His labours were intended "to compose and solve these doubts," and he introduces his conclusions by saying "Let such nameless authors rest in peace: let us come to facts." These facts he considered were sufficient to justify him in saying "A summary of the impregnation of these three waters, is this: first, the common base of the composition, simple water; by exhalation from decomposing pyrites, at a certain distance, impregnated with some of the grosser, but more of the subtilised, universal acid, and also by those, heated to the degree, set forth. Secondly, water thus charged, meeting with an alcaline and calcarious earth, with some proportion of the mercurial principle, it is not difficult to conceive how the impregnation, we find, should be produced. 1. The grosser, with the volatile acid, meeting with an alcaline earth, or the mineral alcali, give the vitriolate salt, discovered in these waters. 2. These acids, with the mercurial principle, and the alcaline base, constitute the sea salt, observed in them. And, 3, these acids, meeting with, and dissolving, absorbent earths, must yield a calcarious earth and a selenite upon evaporation. Agreeable to this theory it is, that these waters appear, by our experiments, to be thus impregnated. And from these principles, their principal virtues are to be adduced." [1] Except in conditions "such as hectics, diabetes, &c." where a water of the particular temperature of the old spring was necessary he preferred "the simple neglected Mill spring."

A Methodical Synopsis of Mineral Waters is a portly quarto of 660 pages which Dr. John Rutty issued in 1757. He deals with the Bristol water mostly from the point of view of analysis for the purposes of which he used samples from the stock which was on sale in Dublin. He records his results with great exactness, and gives also summaries of the methods employed by other experimenters. The water was not "the product of a calcination by a subterraneous fire." Rutty quotes various writers on the use of the water in disease.

In 1758 Dr. A. Sutherland of Bath published a work[2] on the Bristol water, in which he is very severe on Randolph, who in

[1] Part III., p. 366.

[2] *The Nature and Qualities of Bristol Water.*

his opinion was unduly depreciatory of the records upon which Underhill based his observations; he condemns Randolph's "errors and absurdities" and thinks him entitled to the advice contained in the lines—

> "Launch not beyond your depth, but be *discreet*,
> Mark well the point where Sense and Dulness meet."

Dissatisfied with all previous analyses, he subjected the water to a searching independent examination with the assistance of his friend, Dr. Baylies,[1] the "Master of a neat experimental Apparatus, as well as a cabinet of the *Materia Medica*, which might claim a place in any University, and which the Owner not only possesses, but also understands." These experiments are recorded at great length and the sum of them is given in these words: "1. That those who have deemed *Bristol Water* to be a simple elementary Fluid, have founded their opinion merely upon ignorance. 2. That those who have charged them with *Iron*, *Nitre*, *Alum*, *Vitriol*, *Sulphur*, *Lime*, &c., have either grounded their Opinions without Experiment, or have erred in their Analysis," and he affirms positively that the Bristol Waters are efficacious because "they contain: 1. The Spirit. 2. The pure Element. 3. A Vitriolic Acid. 4. A Marine Acid. 5. A Neutral Salt. 6. An Absorbent Earth."[2] Sutherland then considers these separately, defining the first as "its subtile *Æther*." He then says the greatest part of the virtue of some medicinal waters is owing to the "pure element." In this perhaps most modern observers would agree with him. But then, apparently quoting from Baylies's observations, he declares that the chief, perhaps the sole, effect of the Water is due to the "Volatile Vitriolic Acid," an exhalation which is said to be continually breathing up from the Vitriol Stone which abounds in the bowels of the earth. The "Marine Acid," more easily recognised as common sea salt, is said to blend with the vitriolic acid, and the two together "remarkably resist putre-

[1] An interesting insight into Bath medical life is given in Dr. Baylies *Practical Reflections on the Uses and Abuses of Bath Waters . . . to which is added . . . A Narrative of Facts relative to the Physical Confederacy in Bath.* 1757.

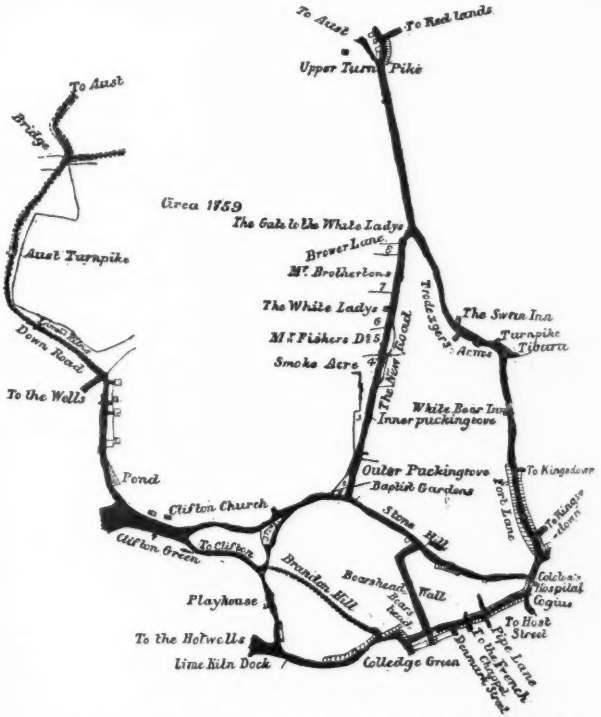
[2] *Op. cit.* A New Edition. 1788. Pp. 63-4.

[3] *Op. cit.*, pp. 72-96.

faction, and subdue those fevers which are the consequence of Pus absorbed and carried through the *circulation*." The "simple Calcarious Earth" which was found was said to render the Waters safe and wholesome, and to give them the "property of correcting Acidities in the first passages," and this was sufficient to account "for those cures, which they daily performed in obstinate Fluxes, Gleets, and Female Weaknesses." Sutherland was careful not to promise too much from the use of the waters; "he who expects to find relief at this spring, must submit to a long course of attendance, he must arm himself with a stock of patience and perseverance. To these he must join temperance of every kind."[1] The good results were in constant danger. "The practice of drinking tea twice a day, or even once, is absurd, it answers only one purpose, that of rendering the virtues of the Waters less effectual."[2] Sutherland believed that "infection" and "translation of morbific matter" often produced consumption, a disease in which the water had proved to be a remedy both easy and effectual, and he had found it useful not only in hæmoptysis but in many other hemorrhages. As a cure for diabetes, "none bids so fair for the name of a *Specific* as Bristol Water,"[3] and he narrates how each of the constituents into which he had resolved it played its part in performing this wonder. Sutherland ends his 151 pages with a long list of other diseases, in almost all of which "it will relieve, where it cannot cure." Sutherland came to the conclusion "that as Mineral Waters in general, so Bristol Waters in particular are of such Efficacy, for the *preservation* of health, as well as he *cure* of Diseases, as in the highest degree, to exceed all *Shop Remedies*, and that they approach the nearest in nature to what has vainly been searched after, An Universal Medicine." In reference to the general attraction of the place, Sutherland states that "provisions of all sorts, are to be had in plenty, during the Summer, which is the season allotted, by custom, for drinking these Waters. Garden Stuff is early, and excellent. There are Lodgings near the Wells, convenient for such as are real Invalids; there are magnificent Lodgings in the beautiful village of Clifton, on the top of the hill, for

[1] *Op. cit.*, p. 122. [2] *Op. cit.*, p. 123. [3] *Op. cit.*, p. 142.

such as have carriages, and whose lungs can bear a keener air. There are *Balls* twice a week, and *Card-playing* every night."[1]



4.—*Clifton and Redland Roads, from MS. plan about 1759.*

The impartiality of this Bath physician[2] is shown by the plea he urges for improvements in order to make the advantages of the place more accessible to visitors.

[1] *Op. cit.*, p. 17.

[2] Those who are curious to see the style of criticism in vogue about the middle of the eighteenth century should turn to the *Cursory Remarks* of Lucas when considering Sutherland's method of investigating the Bath and Bristol waters. Continental opinion about doctors assumed an anti-British form, and Lucas says that the scandalous practices charged upon many practitioners in Bath and Bristol were only too true, and he gives a long list of the devices which were used to obtain and retain patients. He designates Sutherland as "a man of parts and letters, who has written a larger volume than any of his Contemporaries, which at Bath is the sure test of his being the greatest man."

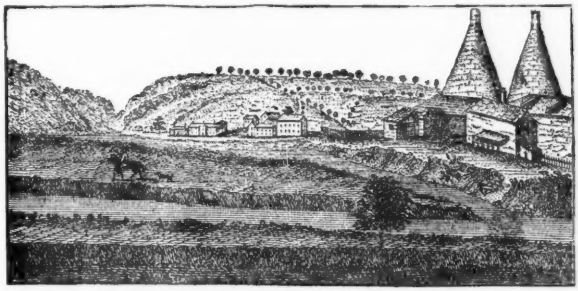
There was still great demand for the water from a distance. It was kept on sale, wholesale and retail, by Fairly Jones at the Golden Wheat Sheaf in Tavistock Street, Covent Garden, who stated that the stock was "constantly fresh and certify'd by the Proprietors of the Well." A reproduction of the label is here given, taken from a book by Dr. Diederick W. Linden, which reached a third edition in 1759.[1] Dr. Linden, who very kindly kept a watchful eye over his patients who came to the Hotwells, where he spent a portion of the summer with them, remonstrated in the *Gentleman's Magazine* in August, 1761, against the evil effects of a lead-smelting house which five years before had been established on the other side of the river nearly opposite the Pump Room of what Linden calls "the second medicinal spring in the kingdom." Linden was considered so great an authority on hydropathy that some of his friends celebrated his attainments in verse which his modesty did not preclude him from printing in his book. Amongst the fulsome things which have been said or written about individuals, this extract will unanimously be accorded a bad eminence:—

> "And when no more these *Earthly Streams* afford
> That Health to him, to others they restor'd;
> When *Galen's* Sons shall his sad Loss deplore;
> His Skill, in Consultations, reap no more:
> When the *Castalian* Nymphs, in mournful Tale,
> The *Universal Friend's* Departure wail;
> *Seraphs*, to deck them, and emblaze his Fame,
> Shall o'er the Skies bespangle LINDEN'S Name;
> In glittering Characters, it there shall shine,
> A *Constellation* in the *Watry Sign:*
> While, bath'd in Bliss, he wafts at full Content,
> In *Heavenly Streams*, above the Firmament."

adding that "the learned gentleman, from pure patriot principles, contends for Sulphur in Bath Waters; well knowing, that since *Solomon* the son of *David* sat upon the throne of Britain, there never was a time, in which there was so great a necessity of having England plentifully stored with Brimstone, as those happy days, in which our Author florishes." In reference to Sutherland's views about the Bristol water Lucas says very little, pouring out the vials of his wrath upon Sutherland for his opinions on the springs of Bath, "where the Faculty arrogate to themselves more infallibility than the gentlemen of the profession do any where else." (Pp. 5-9.)

[1] The first edition appeared in 1748.

This was written by William Oldys, who was Lord Oxford's librarian. Linden appears with a very thin disguise in Dr. Smollett's *Humphrey Clinker*, in which the social life of the Hotwells is viewed from very different standpoints; a good deal of the scenes of Miss Burney's *Evelina* is also laid at the Hotwells.



5.—A View of St. Vincent's Rocks about 1760.

In 1766 the Duke of York came here to get the benefit of the waters. His visit was commemorated by attaching his name to a well-known inn at the Hotwells. Mr. Latimer says that the author of *The Beauties of England*, which was published in 1767, noticed when in Bristol that the water was not only drunk on the spot at the Pump Room but every morning cried in the streets like milk, and the *St. James's Chronicle* of 1st July, 1769, said: "We hear from the Hot Wells that there is a good deal of very good company already; seldom less than 200 at the public breakfasts, with cotillons, and fuller balls than were last year at the height of the season, which is generally about the third week in July." The place was resorted to not only in the usual season; persons of independent fortune had on account of its many attractions either purchased or taken houses in order to live there winter and summer. "The inhabitants met twice a week last winter to drink tea and play at cards, which encreased its sociability." In 1771 "Stage-coaches began to ply between Bristol and the Hotwells, at sixpenny fares."[1]

[1] Evans's *A Chronological Outline of the History of Bristol*, 1824.

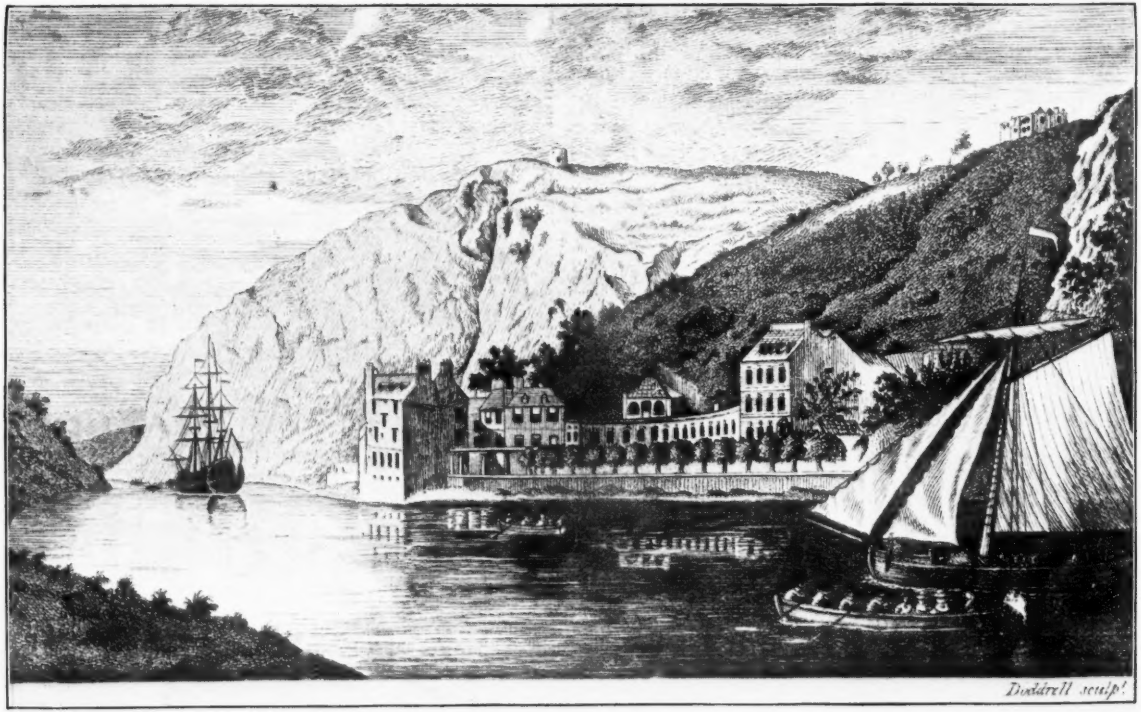
Dr. John Fothergill[1] had seen "many persons recover from pulmonary diseases after drinking the Bristol water, whose cure seemed to be doubtful from any other process." After allowance had been made for better air, change of situation and of objects, and regular mode of living in which fresh air had a considerable part, it still seemed to him "that the water drank fresh at the pump, actually contains principles conducive to the recovery of patients affected with phthisical complaints," and he considered it to be "of signal benefit to consumptive patients," and that when change of air is recommended, Bristol should first of all claim attention.

Dr. John Elliot, of London, in 1781 gave a long list[2] of the disorders in which the Bristol water had been recommended. He says that "the usual method of drinking the water is a glass or two before breakfast, and about five in the afternoon. The next day three glasses before breakfast, and as many in the afternoon; and this is to be continued during the patient's stay at the Wells. A quarter or half an hour is allowed between each glass. A course of these waters requires no preparation further than to empty the bowels by some gentle purge; and if heat or fever requires, to take away a few ounces of blood. Costiveness, however, should be avoided during the course."

In 1785 the exportation of the water took place with the authority of the Merchant Venturers, and every bottle sent out bore the impression of a seal which had been engraved for the purpose. There was at that time, and for many years after, much to occupy and divert the gay company by which the place was thronged. Its reputation in 1789 may be gathered from a description given by Dr. Andrew Carrick, who says: "The Hotwells during summer was one of the best-frequented and most crowded watering-places in the kingdom. Scores of the first nobility were to be found there every season, and such a crowd of invalids of all ranks resorted to the waters that it was often difficult

[1] "Further Remarks on the Treatment of Consumption, &c." *Medical Observations and Inquiries.* By a Society of Physicians in London. Vol. v., 1776, p. 345.

[2] *An Account of the Nature and Medicinal Virtues of the Principal Mineral Waters of Great Britain and Ireland*, p. 114.



6.—"*View of Bristol Hot-Well*," *about 1770.*

for them to provide themselves with any sort of lodgings. About that period a considerable number of lodging letters had in the course of a few years realized very handsome fortunes, without any complaint of extortionate exactions. Three extensive taverns were constantly full, and two spacious ballrooms were profitably kept open. There was a well-attended ball, a public breakfast, and a promenade every week, and often twice a week. The pump-room was all day long the resort of invalids, who left with the keeper of the well many hundreds a year in voluntary donations, and from twelve to two o'clock was generally so crowded that there was often some difficulty in getting up to drink the water. The walk adjoining was in the meantime filled with fashionable company, to whom the sublime scenery of the cliffs was enlivened by the sounds of a band of music. The downs and all the avenues to the Hotwells were filled with strings of carriages, and with parties on horseback and on foot."[1] In *Shiercliff's Bristol and Hotwell Guide*, published in 1789, we learn that "no persons need be at a loss for amusement during their residence at the Hotwell." The river excursions are described and in connection with them it is said "the effect of the music on the water, especially when re-echoed from the rocks, is enchanting, and inspires the most agreeable sensations." The Rev. George Heath, the compiler of Matthews's *New History of Bristol, or Complete Guide and Bristol Directory for the Year, 1793-4*,[2] who was greatly indebted to Shiercliff for descriptions which he obviously paraphrased, adds that "many ladies and gentlemen, cross the River at *Rownham* Ferry and walk to the sweet and wholesome village of *Ashton* to eat strawberries or rasberries with cream: a delicious and salutary repast." After the public breakfasts there were cotillons and country dances, and for these and the balls, which were held every Tuesday, there was a Master of Ceremonies.

The reputation of the Hotwell water was at this time so great as to become itself a danger, for as a last resource consumptive

[1] *The Annals of Bristol in the Nineteenth Century*, 1887, p. 71.

[2] A facsimile edition of this was published by Messrs. John Wright & Co. in 1898.

patients in a dying state were often sent here. Echoing a warning note first sounded by Owen in 1754, in reference to this practice which was so likely to affect injuriously the credit of the place, *Shiercliff's Guide* says: "We do not wish to cast any reflection on the gentlemen of the faculty whose advice they have consulted, but we are afraid it is too often a practice with them not to part with a patient, whilst they have the least probability of success; when they find their art ineffectual, and the case desperate, then and not till then, the physician consigns his patient to the Bristol Hotwell to try the effect of the water, by which he avoids the imputation of their dying under his hands."

(To be continued.)

NOTES ON THE ILLUSTRATIONS.

For enabling me to give some of the illustrations which accompany this paper I am indebted to the courtesy of the authorities of the Bristol Museum and Library, to Mr. J. W. Arrowsmith (the publisher of *Bristol: Past and Present*), to Mr. A. E. Hudd (the Honorary Secretary of the Clifton Antiquarian Club), and to Mr. J. E. Pritchard.

1 (Inset). This is a representation, about the year 1735, of the pump-room that was erected in 1696, and of the buildings in the immediate neighbourhood. Barrett in his list (*History of Bristol* [1789], p. 112) does not mention this view, although he refers to one of the Drawbridge by Halfpenny and Mynde, and one of the Infirmary by Halfpenny. Neither in designer nor in engraver was this illustration fortunate. William Halfpenny was a London "architect and carpenter," (see *Dictionary of National Biography*,) indications of whose profession and work can be seen in the formal outlines of the drawing. J. Mynde was an engraver of small reputation whose work was principally done for the booksellers. (See Bryan's *Dictionary of Painters and Engravers*.) Beginning in 1722, William Halfpenny published several books on Building and Architecture. For some of these he had the help of John Halfpenny, who "is said to have built 1744, Coopers' Hall and 1789—94, S. Paul's Church, Portland Square, both at Bristol" (*Dictionary of Architecture*). The dates render this statement somewhat improbable, and in reference to the Church, Evans says (*A Chronological Outline of the History of Bristol*, 1824) that "the architect and builder was Daniel Hague."

2 (Inset). In 1746 the Merchant Venturers' Society had a coloured plan made to show their Clifton property. A copy that was made for one of the Goldney family appears in a reduced form in vol. v. of the *Proceedings of the Clifton Antiquarian Club*, with a description by Mr. John Latimer. The illustration here given is a portion of this (slightly enlarged), but without the colouring

of the copy from which it was taken. The places can easily be made out by noting one or two landmarks. Clifton Church is shown by *Z* O, and F represents nearly the situation of the present post-office. Clifton Vale is indicated by the Mead Lane. The position of some of the lettering has been slightly altered in order to bring it within the portion reproduced.

3 (Inset). Whilst No. 1 is almost diagrammatic, this, which gives much the same view in 1747, probably errs in being too picturesque. It was most likely drawn by Milton, who was no doubt the William Milton mentioned by Redgrave (*Dictionary of Artists*). Barrett (*loc. cit.*) refers to a view of the Infirmary drawn and engraved by Milton. That which is now known as the Colonnade was not then in existence. The bearer of the cost of the original engraving was a Bristol surgeon, the line of whose practice was referred to by Chatterton (see Greig Smith's *Abdominal Surgery*, section on "Supra-pubic Cystotomy."):

> "The home-bred documents of old Sam. Pye
> Were standing rules to treat their buboes by."

In 1724 Pye published some *Some Observations on the several Methods of Lithotomy*.

The prints from which Nos. 1 and 3 were taken are in the Museum and Library.

4 (p. 19). This plan comes from *Bristol: Past and Present* (III. 194), and represents the principal Clifton roads about the year 1759. With the exception of the roads which led to Jacob's Wells, one only is shown from the higher ground to the Hotwells, going somewhat on the line of Beaufort Buildings and leading to Granby Hill. That which is marked on the 1746 plan as the Mead Lane was probably not of sufficient importance to be called a road and was no doubt unfitted for wheel traffic.

5 (p. 21). This is also from *Bristol: Past and Present* (III. 225). It is a reduced illustration from a picture in Barrett (*op. cit.*, p. 92). The low building on the right is Mr. Warren's house, the site of which is also indicated on the 1746 plan, occupying ground somewhere near the present Clift House before the New Cut was made.

6 (p. 23). In this view, taken direct from Barrett, the Spa buildings are shown between 1766 and 1789, after the Colonnade had been built. The "colonade" referred to by Nott (*Of the Hotwell Waters near Bristol*, 1793, p. 91) was probably a piazza connected with the pump-room, indications of which are to be seen in this view. It also gives the snuff-mill which was erected, about 1766, on the site of the present Observatory. The snuff-mill was burned down in 1777. The Observatory dates from 1828. The name of John Doddrell appears in the Bristol Directories down to 1813 as carrying on his work as engraver in Avon Street, Great Gardens.

All these views of the Hotwells give a very inadequate idea of the extent of the accommodation that existed for visitors, both pleasure-taking and invalid. Barrett says (p. 94) "the buildings lately erected there give it more the appearance of a large town than of lodgings for the sick alone, and have so increased of late as to join the Hotwells quite to Bristol, by an uninterrupted chain of houses."

ON SOME URINARY INFECTIONS, WITH ESPECIAL REFERENCE TO THEIR TREATMENT BY UROTROPIN.[1]

BY

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THE initial difficulty in investigating any urinary infection is to ensure that the sample of urine is obtained free from any accidental contamination. This may be attempted in one of three ways; namely, by supra-pubic puncture and aspiration; by sterilising the meatus urinarius, directing the patient to pass a small quantity of urine, and then receiving the residue in a sterile bottle; or, after first cleansing the meatus, by drawing off the water by means of a well-boiled rubber catheter, using as a lubricant a solution consisting of hyd. iod. $\frac{3}{10}$ gr., powdered soap ʒxii, glycerine ʒvj., water ʒvj. Sterile urine may be obtained in any of these ways, and may be kept in a warm incubator for weeks without showing signs of bacterial growth. Very frequently, however, with the most stringent precautions, it will be found that after a few days' incubation the urine shows evidences of bacterial growth, and from a number of observations on the urine of healthy persons, I am of opinion that, apart from accidental contamination, micro-organisms may be present in this excretion without there being any departure from normal health. The work of looking for micro-organisms in the urine is much simplified if, instead of examining the whole sample at once, it is placed in the warm incubator for a week. The number of micro-organisms is thus much increased, and cultures may be made on plates or in tubes, and films made from the sediment obtained by centrifugalising in sterile pipettes. The centrifuge I have used has been Purdy's, driven by electricity, and this I have found to be a most satisfactory instrument.

[1] Read before the Bristol Medico-Chirurgical Society, Jan. 8th, 1902.

It is often a matter of extreme difficulty to locate the exact portion of the urinary tract in which the lesion is situated. The rule that pus in acid urine is derived either from the urethra, ureters, or kidney, and pus in alkaline urine from the bladder, is only partly correct; and it is seldom possible, in my experience, to differentiate the various forms of epithelium. To form a correct estimate of the site of the lesion it is necessary to have a history of the clinical progress of the case in order to supplement the chemical and microscopical evidence.

The simplest form of urinary infection is the condition known as *bacilluria*, in which the urine, without necessarily being altered in composition, is loaded with bacteria, which may give it a cloudy appearance. This is most frequently met with during and after the fourth week of enteric fever, and may persist for weeks or months. As typhoid bacilli are never present in the blood in large numbers, but few can be eliminated by the kidney, and multiplication must therefore take place in the bladder. This is no doubt aided by the fact that, owing to the exhausting nature of the disease, the organ is imperfectly or infrequently emptied.

I have examined seven typhoid urines. Of these, one, which was acid and cloudy, showed the B. typhosus in large numbers. This case had been eleven days convalescent. In a second case, in which the urine presented the same appearance and reaction, the organism present was the B. coli; and in a third, in which the urine was alkaline and cloudy, cocci were present. Three were sterile, and in one in which cocci were found in acid urine there had possibly been accidental contamination. Typhoid bacilluria is probably present in not more than ten per cent. of all cases; but as it is certain that a few bacilli are present from time to time, it is advisable to always disinfect the urine.

One other case of bacilluria has come under my notice; namely, an infection by B. coli in a girl during an attack of scarlet fever. Whilst it is possible that bacteria may migrate to the bladder from neighbouring organs, or enter *per urethram*, in the majority of cases the infection takes place by the kidney. That this is the not unusual track is evidenced by the fact that

if cultures be taken from the kidneys of persons dying from such acute infectious processes as enteric fever and diphtheria, the specific bacilli are frequently found. Bacilluria sometimes gives rise to blood and pus in small quantities in the urine, but neither of these were found in any of the cases now recorded.

Tubercle.—It has recently been shown that in about fifty per cent. of chronic cases of phthisis, tubercle bacilli are present in the urine, although there may be no lesion of any part of the urinary tract. The condition never becomes a true bacilluria, but is sufficient to warrant the disinfection of the urine, a procedure which at the present time is certainly not practised. Although the introduction of the high-speed centrifuge and specially adapted sedimentation tubes has done much to facilitate the detection of the tubercle bacilli in urine, there yet remains a considerable margin for error, and negative results cannot be accepted as final until inoculation experiments have been made. It is much to be regretted that no facilities exist for such a test at present in Bristol. I have found tubercle bacilli in four out of eleven specimens of urine from suspected cases of tubercular infection. Two of these were cases of pyelonephritis, one of pyelitis, and the fourth was diagnosed as a case of tubercular ulceration of the bladder.

In acute pyelitis and pyelonephritis (non-tubercular), the urine is often alkaline. This may partly be due to the admixture of blood. One such case comes into the present series; namely, that of a soldier who had been discharged from the service shortly after an attack of fever, apparently of a septic nature. He developed acute pyelonephritis whilst under observation, the infecting organisms being staphylo- and streptococci. There were at first a few casts in the urine, but latterly these could not be detected, and the disorder lapsed into the chronic stage. Another case of acute pyelonephritis, confirmed by *post-mortem* examination, was that of an old man, a diabetic, who died of pyæmia following cellulitis. The infecting organism was the staphylococcus aureus. These cases illustrate the possibility of infecting the pelvis of the kidney and the lower urinary tract from the kidney and general circulation; it is more common, however, for infection to spread from below, ascending from the

bladder. In some cases it is difficult to say where the infection has started, as in the case of a man with urinary obstruction due to pressure of a malignant growth on the urethra. This patient had slight cystitis and pyelitis, which improved under treatment; but a *post-mortem* examination, some months later, showed a ureter distended with pus and a kidney riddled with abscesses. The invading organism was a streptococcus. No instrument had been passed *per urethram*, and at the time the urine was examined there was not any ulceration into the genito-urinary tract. The bacillus coli is an organism often associated with pyelitis, but was not found in the present series. One chronic case of pyelonephritis was due to a diplococcus.

Cystitis.—Seven cases of cystitis were investigated. Of these the urine was acid in three, and alkaline in four. Of the three cases with acid urine, the infecting organism was in two the bacillus coli, and in the third a streptococcus. One of the coli infections was in a man, and the organism had probably been introduced by catheterisation; the second case was in a woman, and for this attack no cause could be assigned. The bacillus typhosus and B. lactis ærogenes may also excite acid cystitis.

The four cases of alkaline cystitis were all due to mixed infections. Two were of post-gonorrhœal origin. In one of these staphylococci and (?) gonococci were found, and in the second staphylococci and bacilli. Of the remaining cases, one showed diplococci, bacilli, and spirilla; and the other staphylococci and B. coli. Alkaline cystitis is almost invariably due to the presence of staphylococci, but may also be excited by the proteus bacillus.

With regard to the special treatment of these infections by urotropin, there are two theories brought forward to explain the therapeutic action of this drug in urinary infections. Nicolaier maintains that at the body temperature, and in the presence of uric acid and acid salts, urotropin becomes decomposed in the urine with the formation of formaldehyde. That such a decomposition occurs at higher temperatures, and in the presence of free acid, there is no doubt; but many observations go to show that no such change takes place at so low a temperature as 37.5° C. Cammidge has brought forward evidence to prove

that urotropin forms with acid urine, in the kidney, a compound body which possesses antiseptic properties, and it is to this body (the nature of which is not clear) that its therapeutic action is due. Simple watery solutions of urotropin have some inhibitory and germicidal action; but, although urotropin is in part excreted unchanged in the urine, the bactericidal action cannot be due to the unchanged drug, for it is only by using *very* strong watery solutions that even its inhibitory power can be demonstrated, and it is never possible to bring the urine up to this standard of concentration.

I have tested the inhibitory and germicidal powers of urotropin with cultures of staphylococci, B. coli, and B. typhosus. The cultures were inoculated into, or mixed with, acid urine, to which urotropin had been added so as to make a solution of the strength of 1 in 1000, and then kept in the incubator at 37° C. The inhibitory power was marked in all cases. The bactericidal power, however, varied, being much more marked in the case of the B. typhosus than in the case of the others. The B. lactis ærogenes, which often occurs in cases of cystitis, rapidly dies out in urines to which urotropin is added. Streptococci are more resistant.

The germicidal action is more pronounced if the infected urine be kept in the incubator at 37.5° C. than if left at the room temperature. It also apparently loses much of its power if the urine be originally alkaline. This I was able to demonstrate by using the urine from a case of phosphaturia.

These variations in the behaviour of the drug towards different organisms and conditions of medium and temperature, in part explain the varying results obtained with it clinically.

In bacilluria it has a speedy and permanent curative action, because here the micro-organisms are swimming freely in the urine, which is acid when excreted, and remains so throughout the duration of the disease.

In pyelitis and pyelonephritis, on the other hand, although urotropin generally relieved the symptoms, in none of the cases, tubercular or non-tubercular, did a cure result. The chief reason for this undoubtedly is, that in these cases the invading organisms are deeply imbedded in the tissues, and so cannot be

reached by the drug. Another possible reason may be that in acute pyelitis and pyelonephritis, the urine is sometimes alkaline, and the complex antiseptic body, which Cammidge describes as only being formed with acid urine, is consequently not present.

The best results with urotropin are seen in cases of cystitis secondary to enlargement of the prostate, probably because in such cases the urine on leaving the kidney is acid, and the bladder walls are not deeply penetrated by bacteria. The antiseptic body formed by the urotropin first inhibits the growth of and then kills the bacteria, which give rise to the alkalinity of the urine; and the bladder, freed from this source of irritation, will, if the drug be resumed from time to time, remain permanently in good working order. Presumably cystitis secondary to stricture of the urethra would give equally favourable results.

Cases of cystitis secondary to gonorrhœa do not, in my experience, do well on urotropin. The symptoms are relieved, and the patient continues to take the drug because of the relief; but in two cases under my care, in both of which the urine was originally alkaline, it was possible to detect organisms in the acid urine after the drug had been taken more or less steadily for in one case five, and the other six, months. Cessation from urotropin in such cases generally means a return of the symptoms.

Cystitis due to B. coli, accompanied with acid urine, such as is seen so frequently in women, does not yield readily to urotropin, probably because this organism is peculiarly resistant to the drug. I have found freely motile bacilli in the urine of a patient, suffering from vesical coli infection, who, for twelve days previously, had been taking ten grains of urotropin three times a day.

My custom has been to give urotropin in doses of ten grains four times daily, the last dose on going to bed at night. In none of the cases reported has hæmaturia been noted.

A RETROSPECT OF A FURTHER SERIES OF INTRA-ABDOMINAL OPERATIONS.

BY

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THIS fourth series is continuous with the former papers,[1] and operations performed per vaginam, herniotomy, etc., have been excluded as heretofore.

Appendicitis figures largely in the list; but considering the desperate condition of some of the cases, it is interesting to note that in this and the former (third) series there are recorded thirty-five consecutive operations for appendicitis without a death—a fact which bears testimony to the improved technique in the surgical treatment of this too common affection.

The treatment of diseases of the pancreas is one of the latest developments of abdominal surgery, and the result obtained in Case 9 is a gratifying omen for the future.

The table given below is merely arranged chronologically; but it is convenient to group together operations of a similar nature, in order that any special features of individual cases may be discussed.

A.—**Operations for Diseases of the Ovaries and Fallopian Tubes.**—CASES 6, 12, 13, 23, 31, 32 and 45.

Clinically this group may be divided into:—

Extra-uterine fœtation.—CASE 13.

Fibroma of Ovary.—CASE 31.

Adeno-Cystoma of Ovary.—CASES 12, 23 and 32.

Parovarian Cyst.—CASES 6 and 12.

Salpingo-oöphoritis and Broad Ligament Cysts.—CASE 45.

Extra-uterine fœtation is almost always primarily tubal, and when diagnosed in the earlier months prompt surgical treatment is called for; and should a tubal abortion occur, any

[1] *Bristol M.-Chir. J.*, 1898, xvi. 211; 1900, xviii. 103; 1901, xix. 18, 121.

NO.	SEX AND AGE.	DISEASE.	OPERATION.	RESULT.	REMARKS.
1	F. 45	Malignant stricture of colon (splenic flexure) ...	Colectomy	Recovered..	Intestinal obstruction of twelve days' duration at time of operation.
2	F. 12	Appendicitis	Appendicectomy	Recovered..	Appendix adherent to ileum and right Fallopian tube.
3	F. 23	Appendicitis	Appendicectomy	Recovered..	Appendix adherent in sub-cæcal fossa.
4	F. 47	Myo-fibroma uteri—malignant disease of peritoneum.	Exploratory cœliotomy ...	Recovered..	Fibroid size of small cocoanut. Peritoneum studded with small malignant deposits.
5	M. 64	Malignant disease of descending colon.	Colotomy (tranverse) ...	Recovered..	Growth size of fist fixed to parietes. Retro-peritoneal glands involved.
6	F. 33	Parovarian cyst (right) ...	Ovariotomy	Recovered..	Cyst contained six pints watery fluid, sp. gr 1006, faintly alkaline, slightly albuminous.
7	F. 33	Appendicitis (gangrenous)..	Appendicectomy	Recovered..	Operation five and a half hours after perforation. Vaginal drainage.
8	M. 12	Appendicitis	Appendicectomy	Recovered..	Several enlarged glands removed from meso-cæcum and mesentery.
9	M. 48	Pancreatitis—cholæmia ...	Cholecystotomy	Recovered..	Persistent jaundice for seven weeks before operation. Head of pancreas hard and nodular.
10	F. 32	Appendicitis	Complete inversion of appendix.	Recovered..	Three attacks in twelve months preceding operation.
11	M. 24	Appendicitis	Appendicectomy	Recovered..	Appendix about six inches long.
12	F. 37	Ovarian adeno-cystoma (left)—parovarian cyst (right).	Ovariotomy (left)—excision of cyst (right).	Recovered..	Six pints of yellowish-brown fluid from main cyst, containing cholesterine, sp. gr. 1013, alkaline, loaded with albumin.
13	F. 37	Extra-uterine pregnancy ...	Removal of products of conception and uterine appendages (left).	Recovered..	A ruptured tubal pregnancy, with fœtus of about three months.
14	F. 40	Appendicitis	Appendicectomy	Recovered..	Appendix perforated and partially gangrenous in centre of abscess cavity.
15	M. 49	Appendicitis	Appendicectomy	Recovered..	Appendix adherent along whole length to inner and posterior aspects of cæcum.

NO.	SEX AND AGE.	DISEASE.	OPERATION.	RESULT.	REMARKS.
16	F. 53	Malignant disease of stomach.	Exploratory cœliotomy ..	Died ...	Extensive glandular involvement. Death three weeks after operation.
17	F. 29	Cholelithiasis	Cholecystotomy	Recovered..	Fifty-six calculi removed.
18	F. 23	Intestinal obstruction ...	Division of peritoneal band	Recovered..	All abdominal symptoms disappeared from time of operation, but patient died about a fortnight later from obscure cerebral symptoms (convulsions, &c.)
19	F. 57	Cholelithiasis	Cholecystotomy	Recovered..	One large and one small calculus removed. "Riedel's lobe" of liver present.
20	M. 61	Appendicitis	Appendicectomy	Recovered..	Appendix ran behind cæcum and ascending colon, the distal end being attached to parietes.
21	F. 21	Appendicitis	Appendicectomy	Recovered..	Ten attacks during the two years preceding operation.
22	F. 65	? Intestinal obstruction ...	Exploratory cœliotomy ...	Recovered..	Symptoms of chronic obstruction entirely relieved, though no cause was found.
23	F. 48	Ovarian adeno-cystoma (left).	Ovariotomy	Died ...	Cyst wall had commenced to slough, and peritonitis had set in before operation.
24	M. 29	Appendicitis	Appendicectomy	Recovered..	Three attacks during eighteen months preceding operation.
25	M. 22	Appendicitis	Appendicectomy	Recovered..	Appendix closely bound to cæcum.
26	M. 14	Appendicitis	Appendicectomy	Recovered..	Appendix adherent at distal end to pelvic brim.
27	M. 73	Intestinal obstruction ...	Enterostomy	Recovered..	Matting felt in right iliac fossa. General condition too bad for accurate diagnosis.
28	F. 67	Carcinoma of pylorus ...	Exploratory cœliotomy ...	Died ...	Pylorus adherent to neighbouring structures. Secondary deposits.
29	F. 42	Carcinoma of rectum ...	Inguinal colostomy ..	Recovered	Growth adherent to sacrum and side of pelvis.
30	M. 67	Pancreatitis (acute) ..	Exploratory cœliotomy—enterostomy.	Died ...	Several foci of pus in pancreas Fat embolism.
31	F. 22	Fibroma of ovary (right) ...	Salpingo-oöphorectomy ...	Recovered	Nodular tumour of 2½ inches diameter.
32	F. 57	Ovarian adeno-cystoma (left).	Ovariotomy	Recovered	6½ pints of thick greenish-brown fluid. Collapsed cyst weighed 5¼ lbs.
33	F. 49	Myo-fibroma uteri ...	Retro-peritoneal hystero-myomectomy.	Recovered	Tumour weighed 1¼ lbs., and had caused retention of urine.

NO.	SEX AND AGE.	DISEASE.	OPERATION.	RESULT.	REMARKS.
34	M. 21	Appendicitis	Appendicectomy	Recovered..	Appendix bulbous at distal end and contained small concretion.
35	M. 7	Appendicitis (suppurative).	Cœliotomy—drainage ...	Recovered..	One ounce of fætid pus, circumscribed by adhesions.
36	M. 20	Appendicitis (suppurative).	Cœliotomy—drainage ...	Recovered..	One pint of stinking pus released from pelvis.
37	F. 40	Appendicitis (suppurative).	Cœliotomy—drainage ...	Recovered..	Six ounces of fætid pus. Abscess cavity extended behind cæcum and ascending colon.
38	F. 45	Tubercular peritonitis ...	Cœliotomy	Recovered..	Large omental "tumour" disappeared after operation.
39	M. 64	Carcinoma of rectum ...	Inguinal colostomy ...	Died ...	Growth firmly fixed to sacrum. Subject to Bright's disease and valvular heart mischief.
40	M. 35	Retro-peritcneal sarcoma	Exploratory cœliotomy—drainage.	Relieved ...	Disease apparently commenced in mesenteric glands.
41	F. 14	Appendicitis	Appendicectomy	Recovered..	Seven attacks in two years preceding operation.
42	M. 35	Malignant disease of ascending colon.	Colectomy—ileo-colostomy	Recovered..	Six inches of ileum and about half the large intestine removed.
43	F. 25	Myo-fibroma uteri ..	Pan-hystero-myomectomy	Recovered..	"Cup and ball" myo-fibroma causing retention of urine.
44	F. 62	Malignant stricture of œsophagus.	Gastrostomy	Recovered..	Patient had taken no solid food for two months before operation.
45	F. 42	Appendicitis—broad ligament cysts.	Appendicectomy—salpingo-oöphorectomy (left)—enucleation of cysts (right).	Recovered..	The cysts were probably of inflammatory origin and secondary to the appendicitis.
46	M. 73	Fæcal fistula	Enterectomy-ileo-ileostomy	Recovered..	The fistula resulted from an enterostomy preformed for intestinal obstruction.
47	M. 19	Appendicitis	Appendicectomy	Recovered..	Long appendix with constriction in middle and bulbous end.
48	M. 58	Malignant stricture of œsophagus.	Gastrostomy	Died ...	Death from septic broncho-pneumonia caused by perforation of trachea by a bougie before operation.
49	F. 47	Perforating gastric ulcer ...	Gastrorraphy	Died ...	Operation ten hours after perforation. General peritonitis.
50	M. 68	Malignant disease of rectum	Inguinal colostomy ...	Died ...	Extensive growth fixed at sides of pelvis and to base of bladder. Died from pneumonia.

needless delay adds greatly to the danger of the mother. Diagnosis before rupture is by no means easy; and in a former paper[1] I referred to a case of normal pregnancy associated with a myo-fibroma uteri, in which the presence of a lateral tumour in the abdomen and milk in the breasts led to the erroneous diagnosis of a tubal pregnancy. When rupture has occurred, the existence of attacks of abdominal pain and collapse in association with irregular vaginal hemorrhages warns us of the probable nature of the case and the demand for operative interference. The following example is sufficiently typical of the symptoms and necessary treatment.

CASE 13.—**Ruptured Tubal Pregnancy.**—The patient had been married twelve years, but had not been pregnant. The last menstruation ceased on November 5th. On December 6th and 7th, and again on December 26th, she was seized with severe pain in the hypogastrium. From January 9th to January 19th some irregular vaginal hemorrhage occurred. On February 1st there was another severe attack of abdominal pain and some swelling of the lower abdomen. The temperature was practically normal throughout. When I saw her on February 7th she was evidently in great pain in the lower abdomen, and complained of much vaginal and rectal tenesmus. The hypogastrium was very tender. Under chloroform a well-defined swelling (displaced uterus), like the large end of an egg, could be felt above the inner third of Poupart's ligament on the right side. Extending from this across the lower abdomen to the left iliac fossa was an ill-defined swelling (containing fœtus) reaching to a point about one-third of the distance from the symphysis pubis to the umbilicus. Per vaginam the uterus was pushed to the right and wanting in mobility, the os uteri pointing backwards. In Douglas's pouch and extending across the pelvis, but more to the left than right, was a doughy swelling, the abdominal limits of which have been described. A median incision was made between the umbilicus and pubes. On opening the peritoneum a bloody fluid escaped. Occupying the left side of the pelvis and lower abdomen was a soft swelling shut off by adherent intestines and blood-clot. On pushing the fingers into this swelling, there was a gush of liquid blood and blood-clot. A fœtus and placenta were rapidly brought to the surface—from the centre of this blood-containing cavity—together with a dilated and ruptured left Fallopian tube, which had formed the sac of the products of conception. Large Spencer Wells forceps were placed on the left uterine appendages to control the hemorrhage, and the pelvis thoroughly cleared of blood-clot by pouring in normal saline solution. The

[1] *Bristol. M.-Chir. J.*, 1901, xix 25.

left broad ligament was then tied off, and the distal portion, with the fœtus, placenta, and ruptured tube, cut away. After a final washing of the pelvis with saline solution, the abdomen was closed without drainage. Recovery was uninterrupted.

Solid Tumours of the Ovary are usually characterised by free mobility. They often cause an amount of pain which is quite disproportionate to the size of the tumour, and may be associated with some peritoneal effusion—both probably due to the twisting of the pedicle. In Case 31 all these symptoms were produced by a tumour (2½ inches in diamer, with an irregular surface), which was attached by a rather broad pedicle to the right broad ligament at the hilum of the ovary. It was composed of bundles of fibrous tissue running in various directions.

The occurrence of **peritonitis** in connection with an **ovarian adeno-cystoma** should always be regarded with seriousness, and operative interference should be instituted without delay. The peritonitis not infrequently depends on commencing sloughing of the cyst wall, which existed in Cases 23 and 32. Case 23 unfortunately did not present herself for operation until there was an extensive peritonitis; and the patient died with all the symptoms of septic peritonitis, though I regret that cultures of the fluid were not taken. On the other hand, Case 32, in which sloughing of the cyst wall had commenced, was operated upon before any definite symptoms of peritonitis set in, and the patient recovered. Cultures from the fluid near the sloughy wall in this case were sterile.

The **broad ligament cysts** in Case 45 were apparently of inflammatory origin, being secondary to salpingo-oöphoritis following appendicitis. This case is referred to under appendicitis.

B.—**Operations for Myo-fibroma of the Uterus.**—Cases 4, 33 and 43.

Of these, Case 4 did not admit of removal by reason of the co-existence of malignant disease of the peritoneum—an association which I have seen sufficiently frequently to make me think that the relationship is causal rather than accidental. Case 33 was removed by retro-peritoneal supra-vaginal hystero-

myomectomy, which to my mind is the operation of choice; but the globular character of the tumour in Case 43 necessitated its removal by pan-hystero-myomectomy, the whole tumour and uterus being cut away by opening the vaginal vault from above. The difficulty of operation for the removal of myo-fibromata by the abdominal route might almost be said to be inversely proportional to the size of the tumour. Case 43 was a small tumour of the "cup-and-ball" type, which caused the most intense pain by becoming accurately moulded to the pelvic cavity and causing pressure symptoms. Such a tumour presents great difficulty in removal; for its situation on the top of the vagina prevents it from being delivered through the abdominal wound, and the filling of the pelvic cavity leaves little or no room for the fingers to tie the ovarian and uterine vessels. The case is of further interest as being a good deal below the average age at which it is usually necessary to operate for myo-fibroma uteri.

C.—**Operation for Tubercular Peritonitis.**—Case 38.

Cases of tubercular peritonitis are commonly mistaken for ovarian cysts; but Case 38, which was correctly diagnosed before operation, presented a tumour in the epigastrium which resembled a pancreatic cyst. The "tumour" was composed of matted intestines and a very thick great omentum, and entirely disappeared after operation.

D.—**Operations on the Gall-bladder.**—Cases 9, 17 and 19.

Case 9 is referred to under "operations for diseases of the pancreas." Cases 17 and 19 were cases of gallstones; but Case 17 was complicated by an obstruction of the cystic duct, and Case 19 was associated with a Riedel's lobe of the liver, which is commonly found in cases of cholelithiasis.

E.—**Operations for Diseases of the Pancreas.**—Cases 9 and 30.

I have given a summary of the surgical treatment of pancreatitis in this *Journal* (December, 1901), to which reference may be made. Case 9 is an excellent example of the beneficial effect of indirect drainage of the pancreatic ducts by the operation of cholecystostomy. The jaundice in these cases is produced by the pressure of the swollen pancreatic duct on the

biliary papilla, and drainage of the gall-bladder saves death from cholæmia and allows of the subsidence of the inflammatory mischief in the pancreas. The diagnosis of these cases from gallstones in the common duct and from malignant disease of the head of the pancreas is not easy; but the success attending the treatment of chronic pancreatitis shows the desirability of an exploratory incision in all doubtful cases of chronic jaundice. Case 30 was one of acute pancreatitis. Such cases resemble intestinal obstruction, and are usually so acute in character that a correct diagnosis is not made until the time of operation or after. So far as I know, no case of successful operation for acute pancreatitis has been recorded.

Case 9.—**Chronic Pancreatitis—Cholæmia.**—Six months before I saw the patient he had had attacks of gastro-duodenal catarrh, with transient jaundice. For the past six weeks he had been persistently jaundiced, no bile passing with the motions. There had been frequent rigors, with a temperature of 101°; but there had been no pain or vomiting. There had been great loss of flesh. On opening the abdomen, the gall-bladder and bile ducts were found distended. No gallstones were found. The head of the pancreas felt hard, somewhat nodular and enlarged. Cholecystostomy was performed, and large quantities of bile came through the tube. Cultures from the fluid in the gall-bladder at the time of operation showed staphylococci and two varieties of bacilli—one coliform (Dr. Symes). The patient gained weight, bile appeared in the motions, and the jaundice disappeared. The gall-bladder was drained for about a month. A fistula, however, still remains.

That these cases probably arise from an infective inflammation of the pancreatic ducts is shown by the presence of staphylococci and bacilli in Case 9, and of streptococci in Case 30.

F.—**Operations upon the Stomach.**—Cases 44, 48 and 49.

Frank's method of **gastrostomy**, in which a portion of the stomach is brought to the surface under a bridge of skin, was adopted in Cases 44 and 48. This operation can be performed quickly, and ensures against leakage of gastric juice. The patient can also be fed at once, and this is of great importance, as in cases of malignant disease of the œsophagus the operation is too frequently delayed until the vital power of the sufferer is at a low ebb.

G.—**Operations for Diseases of the Intestines.**—CASES 1, 5, 18, 27, 29, 30, 39, 42, 46 and 50.

These may be divided into—

Enterectomy and Colectomy.—CASES 1, 42 and 46.

Enterostomy and Colostomy.—CASES 5, 27, 29, 30, 39 and 50.

Ileo-colostomy and Ileo-ileostomy.—CASES 42 and 46.

Division of Peritoneal Band.—CASE 18.

Resection of Intestine must be performed in two stages if intestinal obstruction be present, for the resisting power of the patient is so small under these circumstances that immediate resection is attended with a very high mortality. The obstruction should be relieved by bringing the gut to the surface and inserting a Paul's tube at the first operation; and enterectomy or colectomy, with immediate union of the divided bowel, should be performed at the second operation a week or ten days later. This was successfully done in Case 1. When, however, there is no active obstruction present at the time of operation, the resection should be performed and the ends of the divided gut united at one operation. A most extensive colectomy for malignant disease without complete obstruction is the following:

CASE 42.—**Malignant Disease of Ascending Colon—Colectomy—Ileo-colostomy.**—For nine months the patient had complained of attacks of sickness, constipation and abdominal pain; and a week before I saw him a "lump" had been found on the right side of the abdomen. This "lump" was a hard irregular mass, rather larger than the fist, situated in the right iliac fossa. The swelling caused a slight bulging of the anterior parietes, moved slightly with respiration, and could be moved about one inch in an upward direction and rather less from side to side. From the position and comparative fixity of the tumour it was regarded as an affection of the ascending colon, and the fact that there was distinct though slight mobility of the swelling gave some hope that it might be possible to remove the disease. A four-inch vertical incision was made over the outer part of the growth, the middle of the incision being about one inch below the level of the umbilicus. On turning up the great omentum a hard, irregular mass was found occupying the upper part of the ascending colon, but invading the mesocolon and, by its contraction, dragging the transverse colon and cæcum towards itself. The tumour and the adjacent parts of the intestine were delivered through the parietal wound, and isolated with sponge-cloths. One of O'Hara's forceps was placed on the ileum, and another

on the transverse colon well away from the growth. My own intestinal clamps were placed on the gut, about two inches nearer the tumour in each case. The transverse colon was divided close to the proximal side of the O'Hara forceps, and the removal of the growth commenced from this point. The gastro-colic omentum, mesocolon, mesocæcum, and the portion of the mesentery attached to the lower ileum were tied off by a series of mass sutures passing through these structures. The ileum was then divided on the distal side of the other O'Hara forceps, about six inches from the ileo-cæcal valve, and the whole mass thus removed. The two O'Hara forceps were approximated so that the cut end of the ileum came in close contact with the cut end of the transverse colon, and ileo-colostomy by end-to-end union was effected by Halsted's sutures. The mesentery of the ileum was also attached to the remains of the transverse mesocolon. The parts removed consisted of six inches of ileum, the cæcum and vermiform appendix, the whole of the ascending colon with the growth, about two-thirds of the transverse colon, and the whole of the great omentum. Two lymphatic glands, the size of small marbles, were removed from the ascending mesocolon. The growth involved the whole circumference of the gut, and was about three inches in diameter. Solid food was given five days after operation; the bowels acted spontaneously on the eleventh day; and the patient began to get up at the end of three weeks after operation, his recovery being rapid and complete.

In addition to the case above recorded, I used the O'Hara forceps in Case 46. They are most useful in holding the gut in place during the process of suturing; and as they are withdrawn from the bowel, they are not open to the objections which may be urged against many of the mechanical contrivances in common use for enterorraphy.

H.—**Operations for Appendicitis.**—Cases 2, 3, 7, 8, 10, 11, 14, 15, 20, 21, 24, 25, 26, 34, 35, 36, 37, 41, 45 and 47.

In Case 7 the appendix was gangrenous; and in this and in Case 14 the peritonitis was of the diffuse type. Cases 35, 36 and 37 were associated with severe but localized peritonitis, and in these cases only was it thought desirable not to make any attempt to deal with the appendix itself.

The successful issue in the following case of acute perforative appendicitis was largely due to the adoption of abdomino-vaginal drainage.

Case 7.—**Gangrenous Appendicitis — Appendicectomy.**—The patient had some abdominal pain for two days, but had been

out the day before I saw her. There was slight shivering; temperature 102°; and abdominal pain, more marked in the right iliac fossa, gradually increased in intensity during the night. Five and a half hours before operation the pain became agonising, in spite of opium. The legs were drawn up; the tongue was dry; the pulse was small, 120 per minute; the abdomen was distended, and there was acute tenderness in the right iliac fossa. An oblique incision was made over the appendicular region. On opening the peritoneum, about half a pint of a dirty yellow, stinking fluid escaped from the general peritoneal cavity. The coils of intestine were much congested. A few flakes of lymph existed near an agglutinated mass in the appendicular region. Involved in this mass was the appendix, four and a half inches long, almost entirely gangrenous and having a large perforation about a quarter of the way down. After throwing a ligature round its base, the appendix was removed. Stercoraceous fluid, which had escaped from the intestine, was found bathing the pelvis and the flank without any limiting adhesions. A hole was made from the vagina into the peritoneal cavity through Douglas's pouch, and a large rubber tube was passed through from the abdominal wound to the vagina. Another large tube was passed from the abdominal wound into the hollow of the sacrum; and a third tube was passed from the parietal wound through a counter-puncture in the right flank, to drain the pouch below the right kidney. The head of the bed was raised, in order that the exudation might be confined to the pelvis. The patient was extremely ill for some days; but in spite of the severity of the attack the tubes were removed in the course of three weeks, and the patient made an excellent recovery.

The baneful effect of appendicitis upon the female generative organs is perhaps not so fully recognised as its importance deserves. Salpingo-öophoritis not uncommonly ensues; and this in turn may result in tubo-ovarian abscess, or other serious mischief, necessitating a severe, difficult, and often complicated operation. I have had several such cases, and the following is a good example of its class.

CASE 45.—**Appendicitis—Broad Ligament Cysts—Appendicectomy—Salpingo-oöphorectomy—Enucleation of Cysts.**—In the twelve months preceding operation the patient had two attacks of what appeared to be severe pelvic cellulitis, one of which nearly cost her her life. She was never entirely free from pain for long, and had been reduced to a condition of chronic invalidism. There was tenderness over McBurney's point; and behind the uterus, which was fixed, a matted mass could be felt in the neighbourhood of the Fallopian tubes and broad ligaments. An

oblique incision was made in the right iliac fossa. A short dilated appendix, bound down by firm adhesions, was brought to the surface and removed in the usual way. On examining the pelvis, numerous and dense adhesions were felt matting the uterus (which was the size of a two months' pregnancy) and ovaries to the parietes and intestines. A median incision was made between the umbilicus and pubes, and the patient placed in the Trendelenburg posture. Both Fallopian tubes seemed bent on themselves behind the uterus. In the right broad ligament several cysts were broken into, in attempts to enucleate them, and the complexity of the adhesions made it impossible to deal with the somewhat ragged cavity which was left. After some difficulty, the left ovary, Fallopian tube, and some cysts were brought to the surface, and the mass tied off and removed. Both parietal wounds were then completely closed. The dilated appendix contained three small fæcal concretions below a sharp constriction half an inch from the cæcal end. The portion of left broad ligament removed contained three cysts, rather smaller than grapes. The patient made an uninterrupted recovery.

J.—**Exploratory Operations.**—Cases 4, 16, 22, 28, 30 and 40.

With the exception of Cases 22 and 30, all these operations were performed with a view to affording relief in cases of malignant disease. Case 22 had symptoms of chronic intestinal obstruction, which entirely subsided after cœliotomy; and Case 30 was one of acute pancreatitis, and has already been referred to under "Operations for diseases of the pancreas."

THE USE OF X-RAYS IN THE DIAGNOSIS OF RENAL CALCULI.[1]

BY

James Taylor, M.R.C.S.,

Skiagraphist to the Bristol Royal Infirmary.

In the early days of skiagraphy it was considered somewhat of an achievement to get a shadow of a stone in the kidney, and it was only after a prolonged exposure of half an hour or more to the rays that any results were obtained; but now, thanks to

[1] Read before the Bristol Medico-Chirurgical Society, Nov. 13th, 1901.

improvements in the apparatus employed, it is a much easier matter: the exposure is now only a question of a few minutes, and in special cases skiagrams of the kidney region have been taken in a few seconds. Even with improved means, it is not always easy to get a satisfactory skiagram. When we take into consideration that muscle is not very pervious to the rays, and fat still less so; also, when we remember that, in addition to the rays having to penetrate the muscle and fat of the abdominal walls and the omentum, we have to reckon with the contents of the intestines which are in constant movement during respiration, it is not to be wondered at that the resulting shadow of a foreign body (like a stone in the kidney) should be somewhat blurred and indistinct. In young people and women, where there is little or no muscular development, the task of taking a satisfactory skiagram of the region of the kidney is a fairly easy one; but when it comes to having to deal with men with well-developed abdominal muscles, and a large deposit of fat as well, it is a very different matter, and even with much more prolonged exposure to the rays one cannot always get a good result. Mr. J. Hutchinson, jun.,[1] draws attention to the fact that in very fat persons the use of the X-rays is valueless in the detection of renal calculi. Moreover, the calculi themselves are a source of difficulty, for some are more pervious to the rays than others, as was shown by Dr. Swain in his paper on the subject in the *Bristol Medico-Chirurgical Journal* of 1897.[2] This observer showed—and Mr. Harnack, in Mr. Hutchinson's paper already mentioned, bears out his conclusions—that oxalate of lime calculi were the most impervious to the rays and consequently threw the deepest shadow on the photographic plate, that phosphatic calculi were rather more pervious and threw a less dense shadow, and that uric acid calculi were still more pervious and threw a comparatively slight shadow. This being so, it stands to reason that if a too long exposure were given the rays would penetrate a uric acid stone and the presence of a calculus would be overlooked. Consequently, it is always wise to take more than one skiagram, with different lengths of exposure, in a suspected case of calculous disease.

[1] *Brit. M. J.*, 1901, ii. 1130. [2] Vol. xv. 1.

The value of skiagraphy in demonstrating the presence of a stone or stones in the kidney, and in clearing up a doubtful diagnosis, is well shown in the following cases, which have occurred at the Bristol Royal Infirmary during the past year, and which I am enabled to publish through the courtesy of the various members of the surgical staff.

Case 1.—E. F., aged 30, admitted under the care of Mr. Bush, November 20th, 1900, complaining of pain in the right side. She had an illness six years ago which confined her to bed for two weeks, during which illness bad pain in the back was a prominent symptom. She has had four or five attacks of pain in the back since, and has passed "matter" in the urine, but has never passed blood. She has had persistent pain in the right side for the last four months. There has been an occasional rise of temperature morning and evening. On admission an enlarged movable right kidney could be plainly felt. There was some pus in the urine but no blood, and the only microscopical deposits were a few crystals of oxalate of lime. Tubercle bacilli were carefully searched for without result. The lungs were normal. A skiagram taken on November 26th (Fig. 1) showed a large calculus in the lower part of the right kidney. At the operation on November 27th the kidney was found enlarged and cystic, and on incising it thin pus and urine escaped. A large saddle-shaped stone was found and removed from the lower part of the pelvis of the kidney. The patient was discharged cured on December 24th.

There was some doubt in this case as to whether the symptoms were not due to tubercular disease of the kidney, and not to calculus, but the use of the X-rays made certain the presence of a stone.

Case 2.—A. B., aged 21, was admitted under the care of Mr. Prichard, February 23rd, 1901. In this case there was a history of the usual symptoms of stone in the kidney, the man having suffered with renal colic, hæmaturia, and gravel for nearly two years. The skiagram (Fig. 2) confirmed the diagnosis, and showed the stone to be roundish in shape and situated in the upper part of the right kidney. The stone, which chiefly consisted of calcium oxalate, was successfully removed on March 18th, and the patient left the Infirmary well on April 25th.

Case 3.—M. A. J., a woman aged 30, was admitted under the care of Mr. Carwardine, April 20th, 1901. She had been operated on eight years before by the late Mr. Greig Smith, who removed three large and several small stones from the right kidney. She kept well for two years after this. In 1899 she became pregnant, and after the pregnancy a swelling formed in

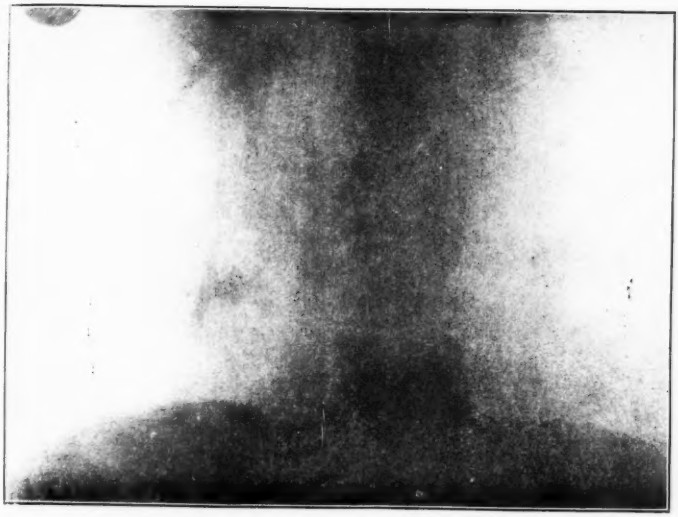

FIG. 1.

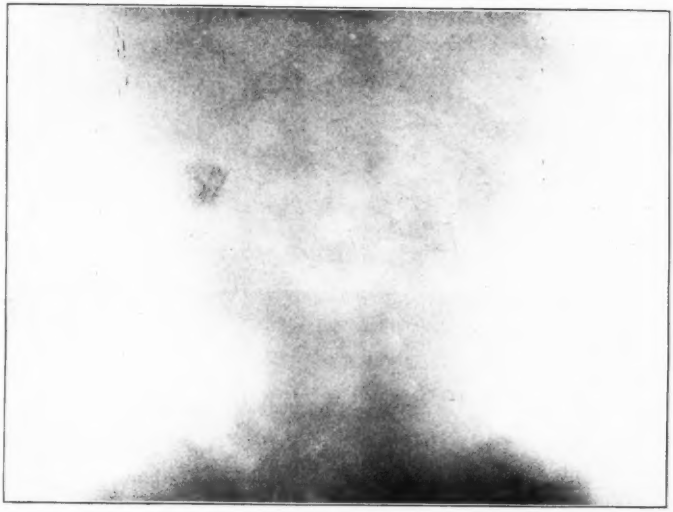

FIG. 2.

FIG. 3.

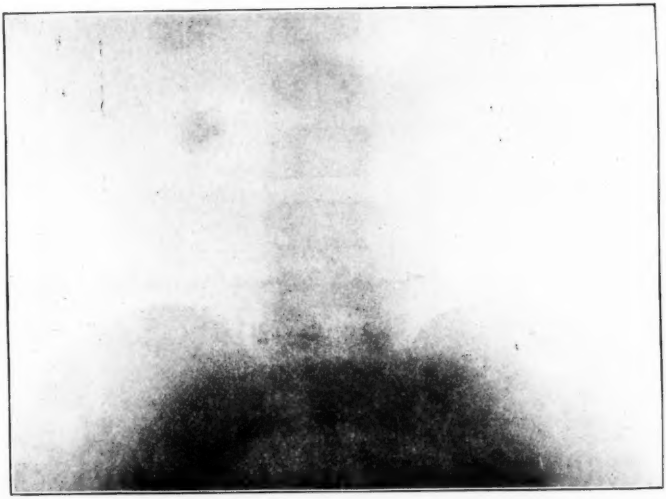

FIG. 4.

the site of the wound where the drainage tube had been inserted at the time of the operation. This swelling was "lanced," and since then the wound has never healed, but has kept discharging. On examination after admission, a globular mass, about the size of a cricket-ball, could be felt in the right loin, and over this swelling there was a sinus, which admitted a probe for a distance of three inches. The left kidney could also be felt. The urine contained pus. A skiagram (Fig. 3) was taken, which showed three calculi in the right kidney, two—or what looked like two—in the middle of the loin, and one nearer to the spine. At the operation, what appeared to be two calculi in the skiagram proved to be the two processes of a single rectangular calculus. This stone was removed after burrowing into the scar tissue, the line of operation being determined by the skiagram. The second calculus was found deep down towards the spine, and was only discovered after a careful search had been made for it by boring with the finger in the precise direction indicated in the skiagram. The calculi after removal weighed 152 grains, and were composed of phosphate and a little carbonate of lime. The patient was discharged to the Convalescent Home on May 30th.

The invaluable aid afforded by the X-rays is well exemplified in this case, for it is almost certain that in the days before the introduction of skiagraphy the second stone would have been overlooked, and the operation would have been a failure. The surgeon, when he had removed, and had carefully examined the space in which such a large stone lay and found no other foreign body, would naturally think that he had done all that was necessary, and the operation would have failed to give relief. Without the skiagram the second stone would have been missed; without its aid to direct him, it would have been distinctly dangerous for the surgeon to have searched for it so close to the vena cava.

Case 4.—A. S., aged 31, was admitted under Mr. Munro Smith, May 29th, 1901, suffering from a typical attack of renal colic. He gave a history of an illness at 9 years of age, and from that time to the present he has had frequent attacks of pain in the right side, and has often passed blood in the urine. A skiagram was taken, which showed a calculous mass in the right kidney, the kidney being apparently outlined by it. At the operation on June 5th a huge stone was removed, which weighed 462 grains, consisting of phosphate of lime. During the next few days after the operation he passed a large number of small calculi (some of which were composed of calcium oxalate) *per urethram*, but with that exception made an uneventful recovery, and was discharged well on July 1st.

This skiagram is not reproduced here, as although the shadow of the stone was perfectly distinct on the photographic plate, yet it was not of sufficient density to produce a print which would show the calculi.

Case 5.—W. Y., aged 13, was admitted to Mr. Bush's ward, October 8th, 1901. He was in the Infirmary two years previously suffering from hæmaturia, on which occasion he was sounded for stone with a negative result. After a short stay in the Infirmary the hæmaturia ceased, and he went out apparently well. Since this date he has had occasional attacks of pain in his side, but no hæmaturia till the present attack. On admission he complained of increased frequency of micturition, but there was no dysuria. The urine was acid and contained blood. Microscopically, besides blood corpuscles, pus cells were present. On October 11th a sound was passed into his bladder, but no stone could be detected. A skiagram was taken on October 18th (Fig. 4), which distinctly showed a rounded stone in the upper part of the right kidney. Nephrolithotomy was performed on October 22nd, and the boy was discharged well on November 11th.

In this case, where the symptoms were somewhat doubtful, the skiagram was of special value, for it not only demonstrated the presence of calculous disease in the kidney, but also showed with certainty which kidney was affected and the part of the organ in which the stone was situated. The latter point was of assistance at the operation, because, when the kidney was exposed, no stone could be felt on manipulation, and the skiagram served as a guide to the direction in which to pass the exploring needle.

To sum up, the use of the X-rays in these five cases confirmed the diagnosis of renal calculus arrived at by ordinary clinical methods in Cases 2 and 4; demonstrated the presence of a stone in a possibly tuberculous kidney in Case 1; showed the disease to be renal, and which kidney was affected, in Case 5; and in Case 3, it not only showed the stones to be multiple, but proved of invaluable assistance to the surgeon in operating.

NOTES ON A CASE OF VARIOLA NIGRA.

(MALIGNANT OR BLACK SMALLPOX.)

BY

D. S. DAVIES, M.D.,

Medical Officer of Health for Bristol City and Port.

THE patient, a strong, able-bodied seaman, came from Boston, Mass., to Portland, Maine, U.S.A., where he signed on a steamer bound for Avonmouth, Bristol, on 21st December, 1901, arriving in Bristol on Monday, 6th January, 1902. Smallpox was prevalent in Boston between July and December, 1901: 344 cases and 41 deaths were recorded during that period. In February, 1902, two further cases of smallpox were introduced into Bristol, and several cases into Liverpool from this part of the United States.

On January 4th, fourteen days after joining the vessel and two days before arrival, he was definitely ill, having probably been sickening for a day previously; he then complained of general chilliness and considerable pains in the sacral region, which he attributed to exposure and strain during rough weather.

On arrival, he applied at the General Hospital on January 6th, having reached the Hospital by train and cab, and was seen by Dr. Symes, who, recognising the gravity of the case, at once reported it, and the patient was admitted on the same evening to one of the city hospitals, under the care of Mr. Heaven, with whom I saw him in consultation on the following morning.

The patient's temperature was 100° F., which was not exceeded during the observed course of his illness, and he presented the characteristic clinical picture of this fortunately rare and always fatal form of smallpox.

He was obviously very ill, complaining of pain in the sacral region, but chiefly of abdominal pain; the tongue and mouth dry and brown, the saliva blood-stained, the face flushed and

puffy, but with no sign of any eruption, which is characteristically suppressed in this variety of smallpox. The body showed, however, an almost universal dusky-red flush, more marked in the axillæ and groins; numerous small petechial spots were present on the trunk and limbs, with more marked and larger bluish-black hemorrhages on the lower part of the abdomen, in the groins, and on the upper part of the inner aspect of the thighs.

On the right thigh were a few abortive vesicles, and one shotty papule on the left arm, but nothing in the shape of a defined smallpox eruption; the pulse was fairly regular and full, the mental condition clear, questions being readily and sensibly answered.

The left conjunctiva showed the characteristic hemorrhage, forming a continuous clot over the outer half of the conjunctiva; the right was deeply congested, but showed no continuous hemorrhage.

The urine was scanty and "coffee coloured;" a few ounces were passed three times in the twenty-four hours.

There was frequent vomiting, chiefly of food administered, with some clots of blood.

He continued much in the same condition for twenty-four hours after admission, when he was suddenly seized about eight o'clock on the 7th January with a convulsive attack affecting the face and arms, which lasted about ten minutes, and during which he died.

An attempt was made to relieve the abdominal pain and vomiting by nepenthe and bismuth. The bowels were relieved by enema, which brought away ordinary fæces; they were relieved naturally twice afterwards; the motions passed were light coloured, with no evidence of bleeding.

The man's age was 29; he showed two scars of infant vaccination: he was therefore what Dr. Bond has called "de-vaccinated," having outlived the term of protection from primary vaccination.

Dr. Symes has kindly informed me that when first seen his condition was pretty much as I have described, but there was then no conjunctival hemorrhage; the general dusky-red flush, which

showed "bathing drawers" distribution, had not been succeeded by the petechial spots and hemorrhages. The temperature was 100° F., pulse 120. Heart and lungs normal, no enlargement of liver or spleen noticeable. The pupils normal in reaction to light and accommodation, and no squint. Beyond a slight haziness as to dates, the patient was mentally quite clear.

This invariably fatal form of smallpox, which is hemorrhagic from the commencement, with an entire suppression of the characteristic eruption, must not be confused with the hemorrhagic conditions which may come on during the development of the true smallpox eruption, either at the papular, vesicular, or pustular stage, and consist in petechial or larger hemorrhages into the skin beneath the papules, vesicles, or pustules; these hemorrhagic conditions, though of bad omen, are not quite invariably fatal, especially if the hemorrhage is limited in extent and does not occur before the pustular stage.

The primary hemorrhagic form of smallpox is fortunately rare, and its importance consists in its liability to escape diagnosis. If once seen, it forms such a striking clinical picture that it is not likely to be forgotten. The chief difficulty in diagnosis is often felt to be the exclusion of "typhus." Dr. Collie[1] points out that in primary hemorrhagic smallpox "the petechial eruption will be present on the third day, or at the latest on the fourth day, in profusion, which excludes typhus. Moreover, in hemorrhagic smallpox there are blue-black spots, hemorrhage from one or more of the mucous membranes, and bloodclots in the conjunctivæ. In typhus there is nothing of the kind. Hemorrhage from the mucous membrane is almost unknown, and although the conjunctivæ are injected, there is no effusion of blood there."

The absolutely non-characteristic appearance of this form of smallpox, when judged by popular ideas, resulted, as is usual, in the disease escaping notification from the vessel, and leading to some chances of infection in street, train, and cab.

Early information from the General Hospital, however, permitted each thread of such possible infection to be picked up promptly, and no further case has arisen in the city. It is

[1] *Fevers*, by Alex. Collie, M.D. H. K. Lewis.

possible that this form of the disease is not very readily communicable, without prolonged or intimate exposure.

Dr. A. J. Harrison has kindly given me notes of two instructive cases of this form of smallpox which came under his notice in Walsall in 1872, during an epidemic.

The first was in a man, J. S., aged 55, who when seen complained of weakness and severe pain in the lumbar region, which at first appeared simply to indicate a return of previous lumbago. On the following day, however, a purpuric rash began to appear on the arms, legs, body, and thighs, followed on the next day by small bullæ and a few papules on the body, when, without any marked hemorrhage, he rapidly sank, retaining his consciousness almost to the end.

The second case was in a young man, W. W., aged 16, who when first seen complained of great pain in the stomach and back. Pulse 80, respiration irregular, often hurried, tongue very foul, face suffused, conjunctivæ injected; the skin, especially over the trunk, dusky-red. In the evening he was worse: petechiæ appeared on the abdomen and in the loins; the pain was extreme and paroxysmal; there was great restlessness, but little delirium. On the following day the symptoms were more severe, and the patient had had little sleep; no true variolous rash appeared, but the purpuric appearances increased; there was some diarrhœa, the urine clear and plentiful; he took nourishment badly. On the third day the symptoms were again aggravated: bullæ appeared in various parts, slight vesicles on face and chest, but no true variolous eruption; the mind remained clear. About two p.m. he began to pass dark-looking blood *per urethram*, blood appeared in the stools, and blood-stained mucus exuded from the nose and lips. He died at six p.m.

The early diagnosis of this form of smallpox is very important for preventive purposes. A good description will be found in Dr. Collie's work on *Fevers* (Lewis), or in the article by the same writer in Quain's *Dictionary of Medicine*. A very useful article, with well-chosen illustrations from negatives by Dr. Killick Millard, on the general diagnosis of smallpox opportunely appears in the December number of *Treatment* (vol. v., No. 10) from the pen of Dr. Meredith Richards. I have found it possible to get by photography excellent records of the smallpox eruption for teaching purposes, and those accompanying Dr. Meredith Richards' article are both clear and characteristic.

[The results of failure to recognise such a case as this have recently been brought prominently before the public in the case of a medical man who was before the magistrates at the Bow

Street Police Court on January 31st, 1902, who treated a similar case as "purpura hemorrhagica," with the result that twelve persons took smallpox and three died. It is interesting to note that in this case the first rash was an erythema resembling the scarlet fever rash. These preliminary scarlatiniform or morbilliform rashes occasionally precede the true eruption, and should always lead to suspicion of smallpox.—EDITOR.]

NOTES ON ETHYL CHLORIDE AS A GENERAL ANÆSTHETIC.[1]

BY

FRANK H. ROSE, M.R.C.S., L.R.C.P. (Lond.),

Anæsthetist to the Bristol Royal Hospital for Sick Children and Women.

HAVING administered or been present at the administration of ethyl chloride in over one hundred cases, I thought that some particulars of the anæsthetic as recorded by others, and noticed by myself, might be of interest.

My own experience of it is in operations about the mouth and throat, in dental work, and for the removal of tonsils and adenoids, and therefore it is only of short anæsthesia that I speak. But it has been successfully administered in operations of eighteen and thirty minutes duration, and in one of fifty minutes for the removal of tubercular testis.

For some years ethyl chloride has been used to induce local anæsthesia, and in 1895 a dentist at Gothenburg observed that occasionally, when used for its local effect only, in teeth extraction, a general narcosis supervened, from which the patient awoke after the extraction declaring that he had felt neither pain nor inconvenience. This led to further investigations, with the result that more or less lengthy operations have been performed by its aid, as well as some thousands of short ones in which nitrous oxide might have been used.

[1] Read before the Bristol Medico-Chirurgical Society, 11th Dec., 1901.

The points in favour of ethyl chloride are:—1st. Its safety. The pulse and respiration are practically unaffected; though the former may be slowed slightly, the volume is unaltered. Up to March last, out of a collection of 2,500 cases, by Lotheissen of Innsbruck, only one death is recorded, that of an extremely bad subject. 2nd. Its pleasant odour. 3rd. Easy induction of anæsthesia, averaging from one and a half to two minutes, and in some cases thirty seconds or less. 4th. The extremely rapid and satisfactory recovery from anæsthesia, with practically no disagreeable or troublesome after-effects, and with no irritating action on heart, lungs or kidneys. 5th. A longer period of anæsthesia for short operations in the throat or mouth than is obtained from nitrous oxide—viz., from three-quarters to two minutes; while congestion is not caused, but rather a stimulative action is produced. 6th. Its portability. My first administration for removal of tonsils and adenoids gave a period of operative anæsthesia allowing a digital examination of pharynx, removal of adenoids and both tonsils, and a final clearing of the pharynx with the finger.

The chief disadvantage noticed is that muscular relaxation is not generally complete. Ethyl chloride can be administered to a patient in the recumbent or in the upright sitting position, and special preparation as for ether or chloroform is not necessary; though due care in this respect, as well as in the examination of the heart, is advisable.

As a rule, breathing is fairly regular, except in very neurotic persons, or alcoholics, or young children who are frightened by the mask. I have had one case, a boy of 8 years, where there was a respiratory tonic spasm, lasting from fifteeen to twenty seconds, which was relieved by removing the mask; several cases in which the breathing was at first very irregular; and one case, of a girl, in which there was some jactitation and stertor; as a rule, however, the respiratory difficulties are small and easily relieved. There is practically no cyanosis or pallor, though in some cases I have noticed faint indications in one or other direction.

The pulse is said to be very slightly slowed at the com-

mencement of administration, but I have noticed no variation worth recording.

I have administered ethyl chloride to a woman of 35, with a loud double mitral murmur, for tooth extraction. She has had up to the present four administrations on successive weeks, and has had no trouble or inconvenience whatever; indeed, after the first and second inductions, she appeared to look forward to it with pleasure.

The conjunctival reflex is sometimes lost, but is more frequently dulled only, and the pupil does not invariably contract. At first I found it difficult to know exactly when the patient was fully "under," as sometimes struggling and phonation occur during operation, but I have had less uncertainty in this matter of late. In one case, a strong, vigorous girl of 26 screamed at the top of her voice during the greater part of the time of administration; only calming down when the extraction of two molar teeth was commenced. Immediately after the operation she smiled, and said she knew she had begun to scream, but she didn't know why, as she had felt neither pain nor unpleasant sensations.

The method of administration recommended is by a Breuer's mask. This is somewhat similar to the face-piece of a Clover's ether apparatus, and is fitted with an inspiratory and an expiratory valve: over the former is a metal ball, in which cotton wool is placed; upon this wool 2 or 3 c.c. of ethyl chloride are poured, followed in half a minute by 2 c.c. more, and so on, if necessary, until from 5 to 10 c.c. have been used. For mouth operations, as ethyl chloride is so rapidly eliminated from the system, it is well to have a gag in position before commencing administration.

It is recommended that all air should be carefully excluded, except such as is charged with the vapour; but I have found that anæsthesia is easily and quickly induced when using a lint mask, and I do not see why all exclusion of air is necessary, considering that when ethyl chloride is used for freezing the gums, and narcosis is induced, the vaponr is inhaled freely mixed with air. The first and most marked case in which I tried this method was that of a child of

5 years, who had several carious teeth and alveolar abscesses. The face was bandaged, and the child was evidently in great pain; her breath was so foul that I did not care to use the Breuer's mask, so substituted the ordinary mask which I use for chloroform, merely blocking the mouth-way with lint—the child breathed well, was completely under, and the limbs were flaccid in rather less than one minute. Operative anæsthesia lasted one and a half minutes, during which four teeth were extracted; 4 c.c. of ethyl chloride were used, and the child woke perfectly conscious, and had no unpleasant after-effects. I have now discontinued the use of Breuer's mask, and am having one made to my own design, by which I hope to obviate the freezing which so frequently delays anæsthesia.

I have had two cases of vomiting during administration; in one of them a hearty meal had been taken about two hours before. Where vomiting after operation has occurred, it has been due, I think, to the presence of swallowed blood in the stomach.

Recovery from anæsthesia is very rapid. In one case, a boy of seven, after extraction of two teeth in the horizontal position, immediately sat up, then jumped off the table and ran out of the room.

In almost all cases the patient speedily regains consciousness, and very rarely complains of having felt pain, except in cases where the operation has clearly exceeded the period of anæsthesia; although struggling during operation is not infrequent.

In conclusion, I consider that ethyl chloride compares favourably with nitrous oxide, in that the period of anæsthesia is longer, and that the condition of analgesia is more marked. An insufficient dose of nitrous oxide allows a patient to feel the pain of an operation, although he may be unable to complain; whereas with ethyl chloride, a patient apparently is conscious of no pain, though he may struggle and phonate.

With an improved mask, and an increased knowledge of the drug and its administration, combined with the portability of the apparatus, etc., I think we have in ethyl chloride an extremely safe and useful anæsthetic.

A CASE OF GASTRO-JEJUNOSTOMY FOR CANCER OF THE PYLORUS.[1]

BY

J. PAUL BUSH, C.M.G., M.R.C.S.,

Surgeon to the Bristol Royal Infirmary.

I PLACE this case of gastro-jejunostomy on record as operations of this nature are not very numerous, and the benefit derived from them is frequently of very short duration.

H. D., aged 45, came under the care of my colleague, Dr. J. E. Shaw, at the Bristol Royal Infirmary, in June, 1901, complaining of general wasting, pain in the belly, and constant vomiting; and I have to thank Dr. Shaw for giving me the earliest opportunity in his power of seeing the patient. For some two years he had suffered from flatulence and intermittent pain after food, and for a year he had noticed he was losing flesh, his normal weight being 11 stone 6 lbs. Six months before admission he was vomiting large quantities of "barmy stuff" chiefly at night, and about this time he first noticed in the vomit food he had taken days previously. This vomiting increased in frequency till admission, there had never been any considerable quantity of blood brought up.

On admission the patient weighed only 7 stone 4 lbs., having lost over 4 stone in eighteen months; he was extremely wasted and anæmic, and looked as if he had only a few days to live; he could keep down no solid food whatever, and frequently vomited liquid nourishment even when taken in small quantities; the stomach was dilated nearly down to the umbilicus, but at times a hard mass could be felt in the position of the pylorus; powerful peristalsis of the stomach could be seen, and this clinical picture Mr. Barling lays down as the clearest indication we have for surgical interference.

After consultation it was decided to do a pylorectomy. On July 2nd, the stomach having been washed out, I made a 5-inch incision in the middle line of the abdomen to 2 inches below the umbilicus (which I excised). Having explored the region with my hand in the belly cavity, I found the pylorus invaded with a tumour too large and too fixed to be removed; moreover it extended into the duodenum and a large number of infected glands could be seen and felt; I therefore had to alter my plans entirely and give up all idea of removing the whole

[1] Read before the Bristol Medico-Chirurgical Society, December 11th, 1901.

growth, and to content myself with performing a gastro-jejunostomy. I followed Von Hacker's operation as nearly as possible.

(*s*) *Stomach.* (*c*) *Transverse Colon.*
(*J*) *Jejunum.* (*a*) *Transverse Meso-colon.*
(*f*) *Mesentery.* (*b*) *Great Omentum.*

FIG. 1 and 2 represent the posterior operation (Von Hacker's).
FIG. 3 the anterior operation (Wölfler's).

The transverse colon (*c*) and great omentum (*b*) and stomach (*s*) were pushed upwards; I then tore with my finger a hole through the transverse meso-colon (*a*), and sutured these torn edges to the posterior surface of the stomach low down and as near as I could get with safety to the pylorus and the greater curvature.

In dividing the transverse meso-colon one must be very careful to select a spot without vessels, as these vessels if torn give a great deal of trouble; the stitching of the mesenteric opening to the stomach is to prevent constriction of the small gut by this hole contracting afterwards. The next step was to find the *upper* end of the jejunum (*J*), and this is best done by running the finger down the bodies of the vertebræ till the pancreas is met and one feels the reflexion of the peritoneum (the inferior duodenal fold) on to the small intestine, which is quite distinct. It is very important to make certain the highest portion of the jejunum has been found, as in one case in which I have seen this operation performed the *ileum* was by mistake joined to the stomach with fatal results from malnutrition.

The jejunum (*J*) having been milked empty and a clamp applied, it was brought up to the stomach (*s*) through the rent in the meso-colon (*a*); it was fixed in this position by posterior Lembert sutures of silk, not penetrating to the mucous coat.

A vertical incision, 2 inches long, was then made in the posterior wall of the stomach, and a corresponding incision made in the jejunum; these incisions were longer than seemed absolutely necessary, in order to avoid any possibility of the risk of subsequent over-contraction of the opening. The entire thicknesses of the cut edges were then united to each other by a whipping stitch, traversing both mucous and serous walls; this suture most efficiently stops the hemorrhage from the cut

edges. Finally, the serous surfaces of jejunum and stomach in front of the anastomosis were brought together by continuous Lembert sutures, which were fastened off by tying them with the loose ends of the first set of stitches. The parts having been cleaned, the abdomen was closed in the usual way; no drain was used. The patient was so collapsed, we had to commence at once with brandy by the mouth; and I think it is important to feed the patient by the mouth at the earliest opportunity, supplementing this by regular rectal injections immediately after the completion of the operation. If vomiting should come on, a complete washing out of the stomach will usually check this, more especially if any blood should be left in that viscus.

The further details of this case need no comment. He made an uninterrupted recovery, the nutrient injections being entirely discontinued by the sixth day after operation; on the ninth day he was in the garden and eating sweetbread. He went home at the end of the fortnight, and commenced his work early in August, when he weighed just under 11 stone and could eat anything, so he told me.

Other means might have been used for uniting the stomach and jejunum, but it appears to me that suture alone or Murphy's button are the best. Although I have frequently used Murphy's button, I do not consider it as good as suture in these stomach cases because it so frequently gets into the stomach, and is not always easily got rid of from that viscus. I think in every case of Mr. Barling's series it was retained in the stomach. The risk of a metal foreign body lying in the stomach of these patients must therefore be seriously considered before we decide to use the button.

In choosing between the anterior operation (Wölfler's) or the posterior operation (Von Hacker's), I prefer fixing the jejunum to the *posterior* wall of the stomach: first, because there is very much less regurgitation of fluids from the small intestine into the stomach, on account of its position (Fig. 2); secondly, because you avoid the risk of strangulating the transverse colon (*c*) by bringing up; over and in front of it, the small intestine (*J*) with its mesentery (*f*). There is also in my opinion less chance of kinking of the jejunum by dragging it up into this forced position. Even if you avoid this, in the anterior operation tympanites is often very trying, and is usually due to the vertical pressure across the front of the colon. Thirdly, the stomach drains so very much better, more especially during the all-important period of the first days following operation, when the patient must of necessity be in bed.

I think that often the regurgitation of food mixed with bile and pancreatic juice, which in several cases has proved so troublesome, is due to the fact that the communication of the stomach with the small intestine is not well placed, *i.e.* not at the most dependent portion of the stomach. It is therefore

wise to try and make this opening, on its posterior surface, towards the pyloric end, and as near the greater curvature as possible. Another cause of regurgitation is the fixing of the intestine to the stomach in the wrong direction. This ought not now to occur, as Rockwitz has pointed out that it is very important that the small intestine should be applied to the stomach in such a manner that when the opening is established between the two, the stomach contents will be passed into the intestine in the normal direction of the peristalsis of both the stomach and the jejunum; and to obtain this a half turn upwards must be made of the intestine before fixing it to the stomach, so that the proximal end of the loop is towards the cardiac end of that viscus.

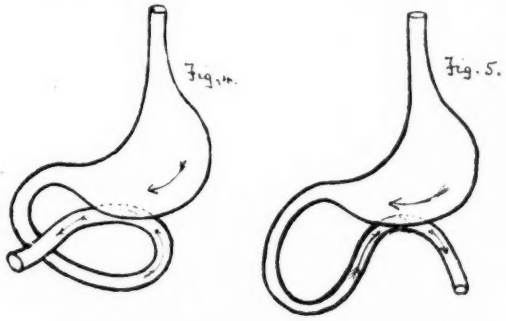

FIG. 4 illustrates the correct and FIG. 5 the incorrect method.

In deciding between a gastro-jejunostomy only, or a complete removal of the pylorus and growth, we must bear in mind the importance of performing the complete operation wherever possible, because we get rid of, at any rate for a time, the absorption of septic matter from an ulcerating surface secreting foul discharge into the intestinal tract; and also because we remove a surface very prone to hemorrhage. There is also always the chance of a permanent cure.

The patient remained well and at work for four months after the operation, and was up to that time maintaining his weight well; but I have since heard that secondary deposits are developing rapidly, and that he is losing ground.[1] I trust the physicians will excuse me if I appeal to them to submit this

[1] Since the above paper was written, Mr. G. Boyd, of Portishead, has kindly furnished me with the following facts. The patient died on December 14th, of secondary deposits. The newly made channel between the stomach and jejunum continued to do its work to the last, the patient being able to eat chops and steaks and any solids he fancied up to within a few days of his death. He was thus saved the painful death by starvation, and for nearly six months after the operation he was enabled to live a useful life.

class of patient as early as possible to surgical interference, if the surgeon is to interfere, and not wait until it is only "a last chance." I feel sure the heavy mortality of this operation has been largely caused by cases being operated upon which were too advanced. Just one word of caution: I would not advise any man to undertake an operation of this nature on the living until he has frequently performed it on the dead body, as with practice the time taken can be reduced by more than one half.

Progress of the Medical Sciences.

MEDICINE.

Dr. Wentworth [1] in a long paper refers to most of the recorded cases of **enlargement of the spleen associated with anæmia.** His survey of the subject is interesting, yet one can scarcely say that much fresh light is thrown upon the pathology of the disease. Perusal of the brief abstracts of the cases given brings out clearly the fact that the more fatal form of splenic anæmia is one of adult life. Of forty-two cases in which the ages are mentioned, only seven occurred under the age of twenty years, and only one under the age of ten. Anæmia associated with an enlarged spleen is comparatively common in infancy, but is not nearly so serious as the variety which occurs in later life. In the out-patient room it is not so very common to see the spleen diminish in size and the child's colour improve while under treatment, and later, one may sometimes have the opportunity of seeing the child attain apparently to perfect health. In connection with the blood affection of infancy, Dr. Wentworth takes some pains to show that there has been no ground for considering that this anæmia and **anæmia infantum pseudo-leukæmia** are two different diseases. The remarks he quotes of Fischl upon the examination of the blood in these cases are of interest. Fischl says: "After many years of work on the blood, one gradually acquires a certain resignation toward the results. The more one examines, the more uncertain one becomes of the significance of certain manifestations. This is especially the case in early childhood and infancy." This is an honest statement. Unfortunately, harm is often done to science by the reluctance of workers to admit that their labour has brought to light few positive facts. To return, however, to splenic anæmia. Stengel also lays little stress upon the appearances of the blood in the disease. He says: "It is quite evident from the study of the etiology, the

[1] *Boston M. & S. J.*, 1901, cxlv. 374 *et seq.*

pathological features, and the character of the blood, that anæmia infantum pseudo-leukæmia is not an independent disease; on the contrary, it seems to be a type of secondary anæmia, which may occur as a consequence of a variety of affections, and which owes its peculiar character of the blood to the age of the patient, rather than to the underlying disease." It is scarcely necessary to remark that the diseases most often associated with an enlarged spleen and anæmia in infants are rickets and syphilis. Wentworth mentions that Fischl in 1894 drew attention to the connection of this anæmia with the diseases, and he quotes the statistics of other writers who refer the association. Thus Fox and Ball found that rickets could not be excluded in a single case out of a series of sixty-three cases of enlargement of the spleen in children. Syphilis was also present in twenty-six cases, and probably in more. Marked anæmia, however, was not always present. This is a point worthy of note. Although enlargement of the spleen is not uncommon in rickets and in syphilis, the peculiar anæmia with the yellowish-brown tint of the skin occurs in only a small percentage of the cases. In splenic anæmia, the enlargement of the spleen may not necessarily be of great size. For example, on turning to my note-books, I find occurring within three months of one another, a spleen down to the iliac crest in a rickety child, aged fifteen months, without definite anæmia; and a spleen of the same size in a syphilitic child, aged eight months, also unassociated with any marked degree of anæmia; while in a child, aged 2¼ years, with the characteristic yellowish tinted skin of splenic anæmia, the spleen only descended one and a half inches below the costal margin. Although I estimated the amount of hæmoglobin in this case, I regret to say that a record of the result has not been entered in my notes; but I remember that the amount was very low. The notes, however, refer to the character of the blood corpuscles. In addition to the common appearance of a widespread deformity of the red blood-cells, an unusual number of megalocytes were present. Some were fully six times the size of an ordinary red blood-cell. It may be mentioned that there was no evidence of rickets or syphilis in this boy. Neither could I find any indication of these diseases in another boy, aged five, with splenic anæmia, who was first seen by me a year ago, and is at present in the hospital. Curiously enough, both of these boys had been born and brought up in localities which one would think are remarkably healthy. One boy has lived near the top of the Cotswolds, and the other high up on the Mendips. It would be a point possibly worthy of investigation whether those cases in which one cannot find evidence of rickets or syphilis are more chronic and more likely to eventually end fatally than in those in which these diseases are present.

Most of the cases of splenic anæmia met with in children occur under the age of two years. Wentworth quotes

Fede, who in sixty-four collected cases found only ten above the age of two years, and we probably may assume that cases which live usually get well before that age. I have not looked up the cases which have been under my care; but the steady improvement which has taken place in most of them would lead me to believe that both the anæmia and enlargement of the spleen would have entirely disappeared before the age of two years. The two boys mentioned above, however, if this be true, must be considered exceptions.

The relation of enlargement of the spleen to the anæmia is not clear. As already indicated, the size of the spleen is no indication of the degree of the anæmia. Dr. Wentworth enters somewhat fully into this point. He states that the spleen after death only shows fibrosis; and there is no evidence that fibrous tissue can produce toxins which injure the blood. This reasoning does not seem to warrant the conclusion that the disease may not arise in the spleen; that is to say, it does not necessarily militate against the view held by Banti that there is first an infection of the spleen, and that toxins are produced there. An infection which gives rise to fibrous tissue in the spleen may give rise also to toxins, which enter the circulation.

* * * *

It is interesting to note that splenic anæmia in infants has been observed to affect several members of the same family; and comparatively recently Bovaird [1] and Brill [2] have recorded cases in which enlargement of the spleen associated with anæmia has occurred in more than one member of a family, at various ages. In Bovaird's two cases, the enlargement of the spleen apparently commenced at the age of three years. Three members of the family mentioned by Brill were affected, but only two came under his notice. One, a boy aged nine, died apparently of splenic anæmia, which, as in Bovaird's cases, commenced at the age of three; but the boy's brother and sister were not affected until they had reached the ages of eighteen and twenty-one. It may be mentioned in passing that six years ago a case of splenic anæmia occurring in a male patient, aged nineteen, under the care of Dr. Shaw, terminated fatally in the Bristol Royal Infirmary; and I understand that a brother of his is now dying from the same disease.

Dr. Parker, in the pages of this *Journal*,[3] has already commented upon the cases of Bovaird and Brill; but another brief reference may not be out of place. One characteristic of these cases appears to have been the very great size of the spleen; for example, in one of Brill's cases the enlargement is said to have given "the entire trunk the shape of a barrel." The heart was displaced upwards so that the apex was in the fifth interspace and the cardiac dulness as high as the first rib. In the other

[1] *Am. J. M. Sc.*, 1900, cxx. 377. [2] *Ibid.*, 1901, cxxi. 377.
[3] *Brist. M.-Chir. J.*, xix. p. 234.

case, the heart impulse was also displaced upwards to the third interspace, but the cardiac dulness reached only to the second rib. The enlargement of the abdomen, however, was very great. In both of Bovaird's cases also the spleen was of great size. Another feature was the chronicity. In three of the cases, the disease had lasted ten, eleven, and twelve years respectively; and the patients were living at the time the records were published. In the fourth case, after the disease had lasted thirteen years the spleen was removed; but the girl died three hours later. A fifth case, as has already been mentioned, ended fatally after the disease had lasted six years. The average length of life, it may be remarked, in splenic anæmia occurring in the adult is similar to that of pernicious anæmia, about two years. Bovaird has collected a few other cases from literature, which from the microscopic appearances of the spleen he considers similar to his own cases, but only in one instance was another member of the family affected.

* * * *

Acute Tuberculosis of the Spleen is the subject of a short paper by D. D. Stewart;[1] and he mentions in passing that Bender has collected seven cases of enlargement of the spleen due to chronic tubercular affection of its substance. Only one case, however, of acute tuberculosis limited to the spleen had apparently been recorded. To this case Stewart adds another. A woman, aged twenty-nine, was seized with a sudden attack of fever, and died nine weeks later. At the autopsy the spleen was four times the normal size, and its surface studded with yellow tubercles the size of a pea. On section, about one half of the spleen had become transformed into a confluent tubercular mass, and tubercles of various sizes were scattered through the rest of the organ. Recent tubercles were also found in the kidneys, liver, and cerebral meninges, but the disease was obviously older in the spleen than elsewhere. Speaking from memory, without having paid special attention to the fact, one would be inclined to think that in cases of acute general tuberculosis the appearance of the tubercles on the spleen occasionally suggests that the disease has made some headway in that gland before the other organs of the body became affected. In one case I have seen miliary tuberculosis limited to the spleen and the liver, but this tuberculosis was not the cause of death. In a boy, aged five, who died of diphtheria, a caseous focus was found in one of the bronchial glands; but both of the lungs were free from disease. Recent tubercles were scattered over the surface of the spleen and throughout its substance, and tubercles were seen over the surface of the liver. The mesenteric glands showed no caseous foci, and there were no ulcers in the intestine. Apparently the inflammation of the bronchi, due to the presence of diphtheria, had caused dissemination of tubercle

[1] *Am. J. M. Sc.*, 1901, cxxii. 309.

bacilli contained in the caseous bronchial gland; and these bacilli had first attacked the spleen. Had the patient lived longer, the tuberculosis would no doubt have become general throughout the body.

THEODORE FISHER.

SURGERY.

Gastric Hemorrhage.—As a result of the recent remarkable advances in the surgical treatment of diseases of the stomach, the surgical aspects of gastric hemorrhage seem destined to receive more attention in the future than they have in the past. The subject was ably discussed by A. W. Mayo Robson in the Hunterian Lectures at the Royal College of Surgeons in March, 1900;[1] again in an address at Edinburgh in February, 1901;[2] and again in conjunction with B. G. A. Moynihan in a recently published book.[3] W. L. Rodman, of Philadelphia, discussed the subject before the American Surgical Association in May, 1900;[4] and again before the American Medical Association in June, 1900.[5] It is an abstract of the writings of these surgeons that we give below. All the writers have published tables of cases collected from various sources, in which operations have been undertaken for the purpose of arresting gastric hemorrhage. Other cases have been reported since these tables were drawn up, in this country for example by C. W. Mansell Moullin[6] and H. Brunton Angus,[7] and also abroad.

Hemorrhage from Gastric and Duodenal Ulcers.—Gastric ulcer has been estimated by Ewald to afflict 5 per cent of the German community. Hemorrhage has been variously estimated to occur in from 50 per cent. to 80 per cent. of all cases of gastric ulcer, and to be fatal under ordinary medical treatment in from 3 per cent. to 11 per cent. of those cases in which it does occur. Taking the average of the various estimates, viz., 7 per cent., as the probable mortality from hemorrhage, and applying the figures to the 500,000 population of a city like Leeds, as Robson does, it will be seen that 25,000 of the inhabitants will suffer in the course of their lives from gastric ulceration, that 12,500 of them will have hæmatemesis, and that 875 will die from the hemorrhage. These figures show the great importance of the subject under discussion.

The hemorrhage in gastric ulcer may be from capillaries and small arterioles, or from larger veins or arteries such as the splenic or coronary. Where the ulcer has the form of a superficial erosion of the mucous membrane, the "Exulceratio Simplex" of Dieulafoy, the hemorrhage will be of the former capillary or small arteriole type; when the ulcer is of the ordinary deeper kind, which tends to perforate, the "Ulcus

[1] *Lancet*, 1900, i. 679. [2] *Ibid.*, 1901, i. 375.
[3] *Diseases of the Stomach and their Surgical Treatment*, 1901, p. 130.
[4] *Tr. Am. Surg. Ass.*, 1900, xviii. 38. [5] *Philad. M. J.*, 1900, v. 1303.
[6] *Lancet*, 1900, ii. 1125. [7] *Brit. M. J.*, 1901, i. 696.

Simplex" of Cruveilhier, the hemorrhage may be of either type. It is obvious that medical treatment is much more likely to successfully arrest the former variety of hemorrhage than the latter. Records, however,—notably those of M. Savariaud,[1]—show that there is no constant relationship between the size of the vessel or vessels which bleed and the amount of blood lost. Similarly, there is no constant relationship between the size of the vessel and the period of survival after the hemorrhage. Death may be sudden from capillary hemorrhage, or delayed ten days with an opening in the aorta the size of a haricot bean. It is, therefore, usually impossible to do more than make a guess as to the size of the bleeding vessel. In nearly four-fifths of the fatal cases the bleeding is from vessels of rather large size. These vessels are usually only laterally opened by the ulceration, though occasionally they are completely divided. In the former case natural hæmostasis is prevented; for retraction and contraction of the artery cannot take place, and the "whole force of the heart is then exerted on the clot which tends to form during the syncope that usually occurs when a large quantity of blood is suddenly poured out" (Robson). There is every reason to believe, as Rodman says, that the bleeding is from capillaries and small arterioles in a much greater proportion of the non-fatal than of the fatal cases. Perhaps in a majority of the cases which survive the hemorrhage is of the capillary type. If the size of the bleeding vessel could be determined with a great degree of probability from the symptoms, which at present seems impossible, it would become much easier to decide when surgical treatment was called for. Obviously, medical treatment cannot be wisely relied upon to permanently arrest hemorrhage from an ulcerated artery the size of the ulnar or radial.

We have seen that according to an average estimate 7 per cent. of the cases in which hemorrhage occurs in this disease end fatally. In other words, 93 per cent. of the patients who have hemorrhage survive under medical treatment. For this reason all writers on the subject, with the exception of Dieulafoy, recommend medical treatment for the first attack of hæmatemesis. Dieulafoy[2] advises surgical treatment after the first hemorrhage, if as much as half a litre (℥ xvij ss.) of blood has been lost; and one of his cases was successfully operated upon by Cazin after the first hemorrhage. Both Robson and Rodman recommend operation if the hemorrhage is repeated a second time. The former recommends it even during the course of the hemorrhage, if the patient can stand it; the latter advises waiting until the bleeding ceases and the patient rallies from the shock. Both writers again recommend operation for the so-called "chronic hemorrhage" in which frequently repeated small hemorrhages occur, tending gradually to cause death. Rodman collected reports of thirty-one cases in which operations

[1] *Thèse de Paris*, 1898. [2] *Presse méd.*, 1898, 31.

were performed for this chronic form of hemorrhage. Six of the patients died, yielding a mortality of 19.3 per cent. In thirty-two cases of operation for acute hæmatemesis there were thirteen deaths, or a mortality rate of 40.6 per cent. There have been other successful operations performed since these statistics were drawn up. The mortality after operation in the acute cases was thus very high; but it is to be remembered in this connection that in all the cases medical treatment was first tried, and that probably none were operated upon too soon, but many too late, for example after the third and fourth hemorrhages.

The method of operating.—Rodman gives the following list of operative methods which have been adopted in attempts to arrest gastric hemorrhage: (1) Partial gastrectomy, or pylorectomy; (2) Gastro-enterostomy; (3) Gastrotomy; (4) Excision; (5) Excision of the ulcer, with ligation of the affected artery; (6) Ligation, *en masse*, of the affected mucous membrane; (7) Suture of the ulcer; (8) Cauterization; (9) Pyloroplasty; (10) Gastrorraphy; (11) Ligature of the principal artery; (12) Curettage of the ulcer with or without cauterization. Of these methods those which accomplish complete removal of the ulcer are the ideal ones; for they not only most effectually check further hemorrhage, but prevent the possibility of future perforation or malignant degeneration. For the complete removal of an ulcer it may be necessary to perform pylorectomy or partial gastrectomy. Up to the present the operation most frequently selected in these cases has been that of gastro-enterostomy, which, by the functional rest it secures for the stomach, favours cicatrization of the ulcer. The operation is indicated when for any reason, such as the locality of the ulcer, existence of adhesions, or the state of the patient, the preceding operation is contra-indicated; and also when multiple ulcers are found, which statistics show may be expected in one case in every five; and, again, when careful exploration of the interior of the stomach shows the hemorrhage to be capillary or from small undiscoverable ulcers. Rodman points out that in at least seven cases exploration of the stomach failed to reveal the source of hemorrhage. He also stated that gastro-enterostomy for hemorrhage had been performed thirteen times with three deaths, or a mortality of 23.07 per cent. In twelve cases where the operation was performed for small but frequently repeated hemorrhages there was no death, which is a most encouraging result.

The method of operating by ligaturing the affected mucous membrane *en masse* has been several times successful. If all the coats of the stomach are included in the ligature, which may be effected by previously pushing or pulling them into a conical eminence, there will be danger of perforation unless supporting Lembert sutures are placed in the serous coat externally. It would appear to be better, therefore, if possible, not to include

the serous coat in the ligature. If the ulcer is treated by cauterization, gastro-enterostomy should also be performed. Pyloroplasty is not to be recommended, unless at the same time the ulcer can be completely excised; for if this is not done, stenosis of the pylorus is likely to develop subsequently (Robson). Gastrorraphy is not to be recommended. The hemorrhage of duodenal ulcer, often indistinguishable from that of gastric ulcer, should be treated on the same principles; and when exploration of the stomach for hemorrhage yields negative results, the duodenum should be explored as thoroughly as possible.

Mansell Moullin [1] treated two cases of gastric hemorrhage successfully with "silk ligatures passed in two directions underneath these ulcers by means of curved needles and tied so as to strangulate the base;" and a third case by ligaturing the whole thickness of the stomach wall, and reinforcing with Lembert sutures externally at the puckered spot. Brunton Angus [2] gained a success by passing a purse-string suture around the ulcer and tying it tightly.

The conclusions of the writers we have quoted may be summarized as follows: Operation is strongly indicated (1) in recurring or so-called chronic hæmatemesis from gastric ulcer; (2) in acute hæmatemesis from the same disease, if there is reason to believe that a large vessel has been eroded, or if there has been a second severe hemorrhage; and (3) that usually the best operation is one of three: viz., (*a*) clean excision of the ulcer, which may involve pylorectomy or partial gastrectomy; or (*b*) gastro-enterostomy; or (*c*) ligation, *en masse*, of the affected portion of mucous membrane.

Hemorrhage from Gastric Carcinoma.—No operation appears to have been performed in gastric carcinoma for the sole purpose of arresting hemorrhage. Should it be called for, gastrectomy, partial or complete, or gastro-enterostomy would be the operations of choice.

Hemorrhage in Cirrhosis of the Liver.—Rodman holds that although no operation appears as yet to have been deliberately performed for gastric hemorrhage considered to be due to cirrhosis of the liver, yet surgical intervention, with limitations, may properly be considered. The results are less likely to be favourable than in the case of gastric ulcer, for there exists a general hemorrhagic tendency in the disease which renders bleeding difficult to arrest in any situation. The conclusion of Preble of Chicago,[3] derived from a study of sixty fatal cases of this form of hemorrhage, are pertinent to the question of surgical intervention. That author found: (1) that gastro-intestinal hemorrhage is not a rare complication of cirrhosis of the liver; (2) that in a third of the cases the first hemorrhage is fatal, and in the remaining two-thirds the hemorrhages continue at intervals for a period lasting from a few months to several years;

[1] *Loc. cit.* [2] *Loc. cit.* [3] *Am. J. M. Sc.*, 1900, cxix. 263.

(3) that in one-third of the cases the diagnosis can be made at or before the first hemorrhage, but in the other cases the diagnosis cannot be made at all, or only after an interval of months or years, during which other symptoms of cirrhosis develop; (4) that œsophageal varices are present in 80 per cent. of the cases, and in half of these the varices show microscopical ruptures, and probably many other ruptures would be found if the veins were tested with air or water; (5) that fatal cases occur in which no œsophageal varices are present, probably from rupture of capillaries in the gastro-intestinal mucous membrane; and (6) that in only 6 per cent. of the cases showing varices are the symptoms of cirrhosis of the liver typical. Mistakes, therefore, have been made in the past and will continue to be made in attempting to distinguish between gastric hemorrhage due to cirrhosis of the liver, and that due to ordinary gastric ulcer; and no doubt some of the cases operated upon for gastric hemorrhage, supposed to be due to ulcer, were in reality cases of venous hemorrhage secondary to cirrhosis of the liver.

Post-operative Hematemesis. — Robson reports that he has seen several cases of this form of gastric hemorrhage, and that three of them were fatal. They followed operation for intestinal obstruction, tuberculous peritonitis, hernia, ovarian tumour, and disease of the gall-bladder. Other surgeons have also reported cases, including Von Eiselsberg (six cases), Mansell Moullin (one case), and Winslow (one case). In some of the cases hemorrhages into the gastric mucosa have been found, and in others numerous small ulcers. The cause remains obscure. As individual cases have occurred without general anæsthesia, or sepsis, or post-operative vomiting, or injury of the omentum, no one of these supposed causes will explain every case. Robson, therefore suggests that a reflex nervous disturbance is the cause. Two cases have been operated upon for this form of hemorrhage by Reichard. They ended fatally. Under general medical treatment more cases have recovered than have died, and this form of treatment seems to be indicated.

Here we may allude to the treatment of gastric hemorrhage of all varieties by the administration of copious hot-water enemas, as advocated by Tripier.[1] In several severe cases of hemorrhage, which had resisted other forms of treatment, that writer obtained excellent results by injecting water at a temperature of 112° F. to 120° F., and repeating the injections twice or thrice daily. The injections appear to act reflexly. As Rodman points out, the injections will also tend to combat the shock due to the hemorrhage, and that for this purpose salt may be added in proportion to make normal salt solution.

Vicarious Hematemesis at the Menstrual Epoch.—It is open to question whether the reported cases of this affection were not really cases of latent gastric ulcer, or at least that the hemorrhage was due to some other cause than absence of menstruation.

[1] *Semaine méd.*, 1898, xviii. 241–245.

Rodman wrote to fifty prominent gynæcologists and surgeons to learn if they had seen any cases of this kind after removal of the appendages or uterus, or both. Only two reported affirmatively. They had each seen a single case. But if vicarious menstruation of this kind ever occurs, it should occur after the above operations carried out in young women. Robson quotes Petersen's experience of three cases treated surgically. They all died.

J. LACY FIRTH.

Reviews of Books.

The Life of Pasteur. By RENÉ VALLERY-RADOT. Translated from the French by Mrs. R. L. Devonshire. Two volumes. Vol. I. Pp. vii., 293. Vol. II. Pp. vii., 336. Westminster: Archibald Constable & Co. 1902.

The lives of Paget and of Pasteur form instructive volumes to the student of the last century. Lady Priestley has contributed an interesting review of them to the current number of the *Nineteenth Century and After*. We are now only concerned with the latter; and the first of these volumes takes us back to the year 1822, when Louis Pasteur was born at Dôle. There do not appear to be any wonderful legends with which to decorate the story of his early life; but "never was home-sickness more acute" than when, in Paris, he remarked: "If I could only get a whiff of the tannery yard, I feel I should be cured." His early work in lactic, tartaric, and alcoholic fermentation was followed a few years later by his experiments which led to the overthrow of the theory of spontaneous generation.

The endless theories and fancies of forty or more years ago were doomed to destruction by his work on atmospheric dust; for after a year's study, Pasteur reached this conclusion: "Gases, fluids, electricity, magnetism, ozone, things known or things occult, there is nothing in the air that is conditional to life, except the germs that it carries." By this work he laid the basis of microbian pathology as we know it to-day, and he himself "had glimpses of another world beyond the phenomena of fermentation — the world of virus ferments." He often regretted that he was not a medical man, fancying that it might have facilitated his task if he had been armed with diplomas: but in 1874 he obtained the active collaboration of Joseph Lister, who wrote as follows: "Allow me to take this opportunity to tender you my most cordial thanks for having, by your brilliant researches, demonstrated to me the truth of the germ theory of putrefaction, and thus furnished me with the principle upon which alone the antiseptic system can be carried out."

After this, in 1877, came the protracted conflict with Dr. Bastian, to whom he wrote as follows: "Do you know why I desire so much to fight and conquer you? It is because you are one of the principal adepts of a medical doctrine which I believe to be fatal to progress in the art of healing—the doctrine of the spontaneity of all diseases." It has not yet been forgotten how keenly this conflict was fought out, and how completely Pasteur became the victor.

Soon afterwards the subject of splenic fever, of which the microbe had just been discovered by Robert Koch, attracted his attention, and then the chicken cholera, from both of which diseases he was able to produce an attenuated virus which might be used as a prophylactic vaccine.

The reception of Pasteur at the International Medical Congress in London in 1881, and his meeting of the Prince of Wales and the Crown Prince of Germany, form a well told story. "When Mr. Pasteur spoke, when his name was mentioned, a thunder of applause rose from all benches, from all nations. An indefatigable worker, a sagacious seeker, a precise and brilliant experimentalist, an implacable logician, and an enthusiastic apostle, he has produced an invincible effect on every mind."

Such applause as Pasteur continued to receive might well have caused him to be satisfied with his labours in the cause of science; but although proud of his discoveries, they but served as a stimulus to future efforts. If people spoke to Pasteur of the danger of infection, "What does it matter?" he said. "Life in the midst of danger is *the* life, the real life, the life of sacrifice, of examples, of fruitfulness."

It will be remembered that the later years of Pasteur's active life were devoted mainly to the Hydrophobia Problem and the establishment of the Pasteur Institute. There his character revealed itself on every occasion. "Every morning, with a step rendered heavy by age and ill-health, he went from his rooms to the Hydrophobia Clinic, arriving there long before the patients. He superintended the preparation of the vaccinal marrows; no detail escaped him. When the time came for inoculations, he was already informed of each patient's name, sometimes of his poor circumstances, and he had a kind word for everyone, often substantial help for the very poor."

Few men live to see so full a display of the fruit of their labours; but no one realised better than Pasteur, shortly before his death in 1895, that "There is still a great deal to do."

The translator has accomplished her task so well that the writing appears to be original, and the publisher has produced two volumes of which the actual weight is in inverse proportion to the gravity and value of the contents. They should be widely read and remembered as the life record of one of the giants of his time.

Annual Report of the Smithsonian Institution, for 1899. Washington: Government Printing Office. 1901.

The collection of essays forming the general appendix of this annual report is always of most absorbing interest; and the volume before us, containing for example papers on Liquid Hydrogen, by Prof. Dewar; Psychical Research, by Sir W. Crookes; the Petrified Forests of Arizona, by Lester F. Ward, &c., &c., is if possible more fascinating than usual, and when once begun the volume must be read from cover to cover.

Even the secretary's business report, which occupies the first 87 pages, is worth reading. How long will it be, we wonder, before the Secretary of our Royal Society is empowered by the Admiralty and War Office to issue circulars to officers on foreign service to make "such collections of rare animals as were practicable for the national zoological collection," this circular containing at the same time directions for shipping and feeding any animals that may be collected? Also, to diplomatic and consular officers to report on any important antiquarian discoveries that may be made in their districts. They do these things better in America.

Text-Book of Medicine. Edited by GEORGE ALEXANDER GIBSON, M.D. Two volumes. Vol. I. Pp. xvi., 824. Vol. II. Pp. xvi., 909. Edinburgh: Young J. Pentland. 1901.

The scheme and scope of this *Text-Book of Medicine* are excellent for the purposes of the student and general practitioner. The editor has gathered round him a number of well-known authorities in the several departments in which they contribute, each one possessing the width of scientific and practical knowledge of his subject that is essential to the writing of clear, concise, and practical articles. The advantages of a text-book produced by such collaboration are obvious; the drawback too often consists in the want of due proportion between its several parts, and herein Dr. G. A. Gibson has displayed his skill as an editor, for judging this work as a whole, he has succeeded in giving us a well-balanced text-book, at once readable, authoritative and complete.

We cannot refer even briefly to the part taken by each of the many contributors, but must content ourselves with noting a few as samples of the contents.

The first volume opens with a preliminary discussion of general etiological and pathological problems—an article from the pen of the late Prof. Kanthack, left by his unfortunate death to be completed by Prof. Sims Woodhead. Such problems as immunity, immunisation, toxæmia, are comprised in this introduction, and the latest views are succinctly stated. The infectious fevers occupy the next 250 pages, and in this section we were especially attracted by the beautifully illustrated and masterly contributions of Dr. Patrick Manson on "Malaria"

and on "Diseases caused by Animal Parasites"; Sir J. W. Moore on "Epidemic Influenza"; and that on "Gout" by A. P. Luff, and "Diabetes" by R. T. Williamson.

In volume ii., Prof. Ralph Stockman is excellent in his articles on "The Hæmapoietic System." Dr. G. A. Gibson's contributions on "Diseases of the Heart" leave nothing to be desired. Sir Thomas Lauder Brunton writes on "Nervous Diseases of the Heart," and Prof. J. Rose Bradford on "Diseases of the Kidneys."

The other portions of the work are dealt with by equally well-known writers; and though we cannot mention all, it must not be inferred that their work has seemed less acceptable or less instructive, for the whole work is admirable.

A Manual of Surgical Treatment. By W. WATSON CHEYNE and F. F. BURGHARD. Part V. Pp. xxii., 470. London: Longmans, Green and Co. 1901.

As we have already reviewed four of these volumes, we need say nothing further as to the scope and merits of the work. Only the first half of this volume is by Mr. Watson Cheyne and Mr. Burghard; the second half, which deals with diseases of the nose, throat, and larynx, is written by Dr. Lambert Lack. The chapter on the operative treatment of cancer of the larynx is, however, written by the original authors. The first half of the volume is occupied by affections of the head, face, jaw, and those of the larynx and trachea, which come under the care of the general surgeon. The treatment of some diseases about which we find very little information in the ordinary text-book—such as tuberculous disease of the skull—is fully described, but the treatment of some other diseases seems hardly to have received sufficient attention. No doubt the ground covered is a very large one, and even in six volumes it is very difficult to go very fully into the treatment of all the important diseases and injuries.

The complete operation for chronic middle-ear suppuration is clearly described by Dr. Lack. It consists in a free opening into the antrum, and from the antrum into the auditory meatus, together with the removal of the ossicles, and curetting the tympanum.

We regret that the only method of draining the distended ventricles and subarachnoid space described, is the one in which the posterior fossa is trephined, and the space above the fourth ventricle opened. The authors write of it as the best method for drainage of the posterior part of the cranial cavity; but why should they describe only a method for draining this part? They write that the great difficulty is to maintain the drainage, "as a tube of medium size gets blocked, and if large allows the semi-fluid cerebellum to escape." This difficulty is not present if the lateral ventricle is drained through the cerebral

cortex, and the danger of injury to the fourth ventricle is avoided.

It is very interesting to read Mr. Watson Cheyne's latest expression of opinion with regard to the results of the operation which he has introduced of internal drainage of the ventricle in hydrocephalus. It is not encouraging. He finds in congenital cases, although the distention of the head disappears, the children mostly die in a few months, and in the acquired cases the operation has not been successful in establishing a communication between the ventricle and the subdural space. He proposes to enclose the strands of catgut in a decalcified bone drainage-tube, in these cases.

Surgical Diseases of the Kidney and Ureter. By HENRY MORRIS, M.B. Two Volumes. Vol. I. Pp. xii., 682. Vol. II. Pp. vii., 670. London: Cassell and Company, Limited. 1901.

We cannot speak too highly of this work, every page of which is impressed with evidences of exhaustive research and well-balanced judgment. Although Mr. Morris's opinion may be regarded as authoritative in renal surgery, a special charm of the monograph is the liberal manner in which the work of others has been recognised and dealt with. The surgeon may thus refer to any section and find the best of everything recorded with commendable consistency and completeness. The labour expended in the production must have been immense, and we congratulate the author upon a work which will be the standard one for many years to come. It would be scarcely possible, if not invidious, to offer any criticism of so masterly a work. The reliability of the X-rays in the detection of calculi has doubtless increased since the text was written, but Mr. Morris rightly calls attention to the fallacies of this means of diagnosis in certain cases; and we think he takes a somewhat conservative view of the value of cystoscopy and ureteral catheterization—though we agree with him that it would be a misfortune if these measures were too widely adopted, on account of the difficulties and risks. Under nephropexy we have not noticed reference to the method by suspension with gauze. Mr. Morris's book will prove a necessity to everyone interested in the surgery of the kidney and ureter, and is an ornament of great value to British literature.

Diseases of the Stomach and their Surgical Treatment. By A. W. MAYO ROBSON and B. G. A. MOYNIHAN. Pp. xi., 308. London: Baillière, Tindall & Cox. 1901.

The Hunterian lectures of 1900 have been greatly expanded in the production of the present volume. Considerably more than one-third of the book is taken up by the consideration of

gastric ulcer and its complications, and this is the best part of the work. As a consequence of this, other subjects have not been dealt with so fully as their importance deserves, though the book may be taken as an excellent summary of our knowledge of the surgery of the stomach.

The wide experience of the authors on the subject of gastric ulcer perhaps justifies the decided views enunciated on the treatment of acute hemorrhage by operation, views which are expressed firmly, clearly and rationally.

We are rather left to the conclusion that gastro-enterostomy should be performed in all cases of pyloric carcinoma in which pylorectomy is not justifiable; but when it is stated that of twenty-three such cases only thirteen recovered, and most of these for a comparatively short period (two only lived more than six months after operation), it would appear desirable that some discrimination should be adopted in the selection of cases for an operation which is only palliative at the best.

In several places the figures might, with advantage, be placed in closer proximity to the letterpress—thus, lymphadenoma is described on p. 55 and the illustration of it (fig. 12) appears on p. 57; and Senn's method of gastrostomy appears on p. 258, and the corresponding illustration (fig. 51) on p. 255.

The book is clear, readable and thoroughly sound in its teaching, and may be taken as a reliable exposition of the great advances which have been made in this subject.

Surgical Experiences in South Africa, 1899-1900. By GEORGE HENRY MAKINS. Pp. xvi., 493. London: Smith, Elder & Co. 1901.

These surgical experiences form a most comprehensive account of certain injuries received in battle; but this work, most excellent as it is as far as it goes, must be supplemented by a treatise which deals more fully with the injuries caused by shells, before a complete knowledge of the latest military surgery is gained. The details of shell surgery (if we may use such a term) will be best studied by perusing such authors as have described the surgery in connection with the Natal Army.

The author must have studied the individual cases of several thousand injuries, and having been attached to all three varieties of hospitals—namely, Field, Stationary, and Base,—he has had the opportunity of doing a vast amount of work, and he has placed the work done in a clear and comprehensive manner before the medical profession at home.

We are glad to see the author favours the Indian type of Field Hospital when comparing it with the Home type; we fully endorse this view, although we understand this type of Field Hospital is not generally preferred by the "Home Authorities."

We are pleased to read the very sound remarks concerning female nurses, and we feel certain that after the favourable

opinions that have now been so often expressed, that the authorities at head-quarters will in future make such large additions to the nursing staff of the Army as will ensure the the sick and wounded soldier being chiefly nursed by women.

The author has perhaps been altogether too mild in his criticisms dealing with those persons (many of whom were totally unacquainted with hospital requirements) who had not a single good word to say for the hospital management of this war; and we are gratified to see that such a well-informed civilian, and one who has done so much magnificent work during nine months in the South African hospitals, is able to give us such reassuring testimony of the good work done in our military and other hospitals during the Boer War.

It is impossible for us to discuss the various chapters in detail; we advise all surgeons to read carefully their contents, which are finely illustrated with numerous instructive drawings and skiagrams. We consider this work is one of the best of the recent additions to military surgery.

Editorial Notes.

A University of Bristol.—We believe that it is not unreasonable to hope that the movement in favour of establishing a University for the South and West of England was distinctly advanced at the Annual Dinner of University College Colston Society, which was held in the large hall of that institution on the 5th of February. The great philanthropist, Edward Colston, in memory of whom the Society has been named, was a pioneer in the education of the people; it is therefore fitting that the dominant thought expressed in the speeches at this annual gathering should have been the urgent need of a University for the part of the United Kingdom of which Bristol is the centre.

The toast of "The King" having been loyally honoured, Dr. SHINGLETON SMITH submitted that of the "Ministers of all Denominations"; and while reminding those present that the old and flourishing Medical School of Bristol was the germ from which University College was raised, gratefully acknowledged the active and prominent part played by the clergy of various denominations in founding that College, mentioning especially Dean Elliott, the Bishop of Hereford, the Rev. Dr. Jowett, and the Rev. Dr. Gotch.

The LORD BISHOP OF HEREFORD, in welcoming the guest of the evening, Mr. Haldane, K.C., M.P., pointed out that he was a member of a distinguished University of Scotland, and a Scotch University was pre-eminently a University for the people; and if he understood the aim aright, it was that the Bristol University should be a University for the people. But Mr. Haldane was likewise a member of a German University. All knew that whilst in England they had been slow and conservative in the establishment of Universities, in Germany they had multiplied, and this perhaps, more than any other fact, accounted for Germany forging ahead.

Mr. HALDANE, K.C., M.P., stated that "the extension of the University movement in this country touched the very heart and the life of this country. The Educational System of the country would never be put on a proper footing until the whole system of education—secondary, primary, and technical—in each district was permeated from the top. That meant we must have more Universities. The great cities of Manchester, and Liverpool, and of Yorkshire were seeking to have their own Universities, that their manufacturing and social life might be permeated by that influence which a great University only could furnish. So it had been at Birmingham, and in the determination of Liverpool to have a University of her own they had only a sign of the advance of the times. Now the West of England! They were without anything of the kind. It seemed to him there was probably no part of the United Kingdom which was really more in need of the concentration of academic purpose which a University alone could give than the West of England. They had that admirable institution, the University College in Bristol; they had that great and most efficiently organised institution, the Merchant Venturers' Technical College; but they lacked what nothing could take the place of—the influence of the University itself.

"But Bristol must try to bring within its ambit as much as possible of the rest of the country of which they were the centre. There was the University College at Reading, with a very distinguished principal; they had Southampton, Exeter, and the possibilities of development in the future in such great

towns as Plymouth and Devonport. They had to consider how they could best find a pattern of University institution which would succeed in embracing the elements which they desired to bring in, and leave intact and outside the elements which belonged properly to secondary education. It seemed to him the time was ripe for a movement such as this in the West of England."

* * * * *

We are pleased to record that Sir William Hy. Wills, Bart., has offered £1,000 to the funds of University College, provided that four other contributions of a similar amount are promised within a limited period, and that Sir Fred. Wills, Bart., M.P., has guaranteed one of these thousand pounds.

The authoritative expressions of opinion which we quote in brief abstracts, were warmly endorsed by the Lord Mayor and by Mr. Howell Davies from the standpoint of commerce; and though our readers all belong to one section of the public, they must feel that the standing of the medical profession in the West of England will be raised by having a University within their district, and that such a necessary and happy consummation can only occur by the linking together of the various interests of professional and commercial life.

The striking changes which are impending as regards University extension in the Northern counties shows that there exists in the North a thorough awakening of local interest in the advancement of higher education. If Liverpool is to have a University of its own, if mere partnership in the Victoria University does not suffice for its needs, then the latter will naturally become the University for Manchester, and Leeds will aim to be the centre for the whole county of York. It appears that the possession of a University of its own is a thing which strikes the civic fancy, and so Birmingham and Liverpool have resolved that they will be absolutely independent. The Corporation of Liverpool are proposing that a considerable annual grant to the proposed civic University shall be provided out of municipal funds; in Birmingham this does not appear to be needful, as the University, of which Mr. Chamberlain is the first Chancellor, has had no lack of financial support. In Bristol, we can scarcely

expect that the example of Birmingham, or even of Liverpool, will be quickly followed, but it is time that the question of University extension in the West of England should be taken up with spirit; and if Bristol does not wish to act by itself as the Northern cities are doing, Mr. Haldane has shown how a Western University may be provided by a combination of all the forces of the district.

Bristol is proposing to expend something like £2,000,000 sterling in Docks extension, and she has already enormous commercial interests. But we venture to assert that it is a short-sighted policy which launches on great commercial enterprises while neglecting the obvious necessity of providing facilities for that wider education which is essential now, and must be more so in the immediate future, which alone will enable the community at large to turn their commercial opportunities to the greatest advantage and so reap the benefit of their spirited policy. If this applies to Bristol, it does so in no less degree to Southampton, and to Plymouth, and other great centres in the South and West of England, though it is not cities and centres alone which must be taken into consideration, but also the great agricultural industries which form the staple employment of millions of the inhabitants. Let us therefore hope that the South and West of England will not long remain the only part of the United Kingdom without a University suited to its needs.

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Smallpox in Bristol.—As yet, the epidemic of smallpox in London has been so successfully managed that the disease has taken little hold of other centres. As regards Bristol, we have ascertained that the facts are quite simple, and are as follows:—

(*a*) A man of 29. L. J. K., A.B. on steamer trading from London, arrived at Avonmouth, 19th December, 1901, on the fourth day of eruption of a very modified attack of smallpox. He was isolated the same evening, and discharged cured from the Hospital Ship on Jan. 16th, 1902. No cases are known to have resulted from this one, which was promptly diagnosed and reported by Dr. Hedley Hill.

(*b*) A man of 28. P. H., A.B. on a steamer from Portland, Maine, U.S.A., arrived at Avonmouth 6th January, three days

ill with primary hemorrhagic smallpox (malignant or black smallpox), was admitted to the City Hospital on same evening, and died on 7th January. No cases are known to have resulted from this one, which was reported from the General Hospital.

For these facts we are indebted to the Medical Officer of Health, Dr. D. S. Davies, who makes the following comment thereon :—"It is curious that both cases escaped recognition by the master of the vessel, the first being so mild that the sailor continued to perform his ordinary duties, the second so unusual that the idea of smallpox was not presented to the lay mind. Notification was thus omitted, and the patients made their way by train into the City. Fortunately they fell into good hands, so that isolation of patients, disinfection of train, cab, and re-vaccination of contacts was secured very early, and apparently with complete success. These introductions by ship frequently happen, and we have become accustomed to expect no result; early and correct diagnosis is the important factor in suppression. Nothing further has occurred."

* * * * *

The subject of **Contract Practice**, its advantages and evils, is ever present, on which an outcry is from time to time renewed, the burden of which is "Fair play for the doctor." The question has been recently brought before us at a meeting of the Bath and Bristol branch of the British Medical Association by Dr. A. Baillie McKee, who thought it would be generally admitted that contract practice is not the best thing for the patient, the medical man, and the profession as a whole. He pointed out that the evils attending it arise from the assumption by the medical man of a *rôle* which does not properly belong to him, through his acceptance of risks which ought to be borne by the societies and clubs. He proposed that the subscriptions of members should be placed in a "Medical Attendance Fund," and the members should be free to choose their own medical attendant, fees being paid for each item of work done. He expressed his belief that this method would be very acceptable to the working man, and if once fairly started would gradually take the place of the present system of contract. Dr. McKee's proposals are expounded at some length in *The British Medical*

Journal (Feb. 8th, 1902), and we think that they are worthy of careful consideration and trial.

* * * * *

Sanatorium Treatment of Consumption.—As so many West of England medical practitioners have a direct interest in the progress of the Winsley Sanatorium for consumptives, we are glad to report the advances that have been made since our last issue towards the realisation of the scheme. The levelling of the site has been completed, and a large quantity of good building stone has been prepared and stacked ready for use as soon as the Committee have sufficient money in hand to justify their commencing to build. This, however, will necessitate the collection of several thousand pounds yet.

It would seem that not only will the Sanatorium be a model in its construction, but it will furnish an excellent example in its financial aspects; for the Corporation of Bath has undertaken to contribute £500 towards the cost of construction as soon as the building is erected, and to maintain two beds by an annual subscription of £130; and the Great Western Railway Club, Railway employés, promise £400 towards construction, and £130 annually to maintain another two beds.

A deputation from the Executive Committee of the Gloucester, Somerset, and Wilts branch of the National Association, consisting of Dr. Lionel Weatherly, *Chairman*, Sir John Goldney, Dr. Shingleton Smith, Dr. A. J. Harrison, Mr. Nelson Dobson, Dr. Watson Williams, *Treasurer*, Dr. J. Michell Clarke, *Hon. General Secretary*, and Dr. Kenneth Wills, *Hon. Sec.* for Bristol, waited on the Health Committee of the Bristol Town Council, at a meeting held on February 4th, at the Bristol Council House, to urge the desirability of the Bristol Corporation contributing to the cost of construction and the maintenance of three or four beds for cases nominated by the Corporation of Bristol. Of course, as is only right and fitting, these public bodies who contribute thus to the cost and maintenance will be represented on the Board of Governors; but it is well that it should be widely known that counsel's opinion has been taken, and leaves no room for doubt as to the legality of such contributions by municipal corporations. However confident the

medical profession may be that the Sanatorium treatment of consumption is beyond dispute successful in its results, it is quite conceivable that public bodies might hesitate to launch out in the large expenditure that a number of separate Sanatoria would entail. The opportunity thus afforded for Bristol and other municipal bodies to have a few beds of their own will provide for their poorer consumptive patients at a relatively small cost, and we venture to assert that experience will demonstrate the economy of the method which saves working men and women from drifting on to the rates. Hence we sincerely trust that Bristol will follow the example of Bath in this matter.

Notes on New Drugs and Preparations for the Sick.

Rogers' Sprays.—H. E. MATTHEWS, Clifton [Agent].—Personal experience with the sprays designed by Rogers has proved their convenience, cleanliness, and reliability. The No. 1 spray is very serviceable in general practice, being equally applicable for aqueous solutions to nose or pharynx. For the larynx and naso-pharynx the adjustable aquol spray is excellent, as it can be manipulated by the right hand alone, leaving the left hand free. The pocket atomiser and nasal oil atomiser, too, are to be commended for simplicity and for throwing a fine spray of oily solutions.

FIG. 1.
Rogers' No. 1 Spray.

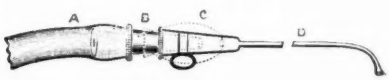

FIG. 2.
Showing the bellows tubing detached from the Spray and fitted on to an Eustachian Catheter.

Cascara Sagrada (Hawley).—EVANS, LESCHER & WEBB, London.—The value of cascara in various forms for the treat-

ment of constipation is widely known and appreciated, and of the many excellent preparations on the market we know of none better and more pleasant in administration than these capsules.

Savaresse's Membranous Capsules.—EVANS, LESCHER & WEBB, London.—To disguise the taste of nauseous remedies, such as Sandal Wood Oil or Balsam of Copaiba, gelatine capsules have been largely used. But inasmuch as the gelatine covering is soluble in the stomach, the capsules burst there, and eructations and nausea are prone to cause much discomfort to the patient. These Membranous Capsules have been introduced to obviate these disadvantages, and as they are almost insoluble till they have passed the stomach and have reached the small intestine, they are a great improvement on gelatine capsules and a distinct advance in pharmacy of considerable practical value.

Merck's Pure Glycerinated Calf Vaccine Lymph (Tube 351311). —16 Jewry Street, London, E.C.—It is at the present time of the highest importance that we should have absolutely reliable vaccine lymph. Complaints of inefficiency have been frequent of late, but this preparation has been made for many years under the stringent safeguards which are officially demanded in Germany, and is shown by clinical results and bacteriological examination to be one of the best and most reliable.

Dr. J. O. Symes has made an examination of a sample, and he reports that "in examining the preparation for extraneous organisms it maintained a high standard of purity." The notice which accompanies each tube, stating the length of time which it may be kept without losing its potency, is calculated to prevent vexatious disappointments from unsuccessful vaccination. We are informed that this lymph gives results clinically which cannot well be surpassed.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in December:

February 28th, 1902.

J. Paul Bush, C.M.G. (1)	3 volumes
L. M. Griffiths (2)	6 ,,
The Laryngological Society of London (3)	1 volume.
The Pathological Society of London (4)	1 ,,
The Surgeon-General, United States Army (5) ...	1 ,,
James Swain, M.D. (6)	1 ,,

A framed picture has been presented by Mr. C. E. S. Flemming.

FORTY-THIRD LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors, and show by whom the volumes were presented. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

Bailey, W. C. ... *The Lepers of our Indian Empire* ... ... (2) [1891]
Brunton, Sir L. .. *On Disorders of Assimilation, Digestion, etc.* 1901
Bury, J. S. ... ... *The Bradshaw Lecture on Prognosis in Relation to Diseases of the Nervous System* ... ... [N.D.]
Catalogue of the Library of the Ophthalmological Society of the United Kingdom ... . 4th Ed. 1901
Catalogue (Index) of the Library of the Surgeon-General's Office, United States Army ... ... (5) 2nd Ser., Vol. VI. 1901
Chapman, H. J.... *On Ulcers* ... ... (2) 2nd Ed. 1853
Cotterell, E. ... *The Pocket Gray* (Ed. by C. H. Fagge) ... 5th Ed. 1901
Crile, G. W. ... *Problems relating to Surgical Operations* 1901
Cross, F. R. ... *Some Landmarks in the Progress of Medical Science* ... 1901
Davidson, A. ... *Syllabus of Lectures to Nurses* ... ... [N.D.]
Ellis, H. ... ... *Studies in the Psychology of Sex—Sexual Inversion* [2nd Ed.] 1901
Emery, W. D'E. *Bacteriological Diagnosis* 1902
Hardy, H. N. ... *The State of the Medical Profession in Great Britain and Ireland in 1900* ... ... (1) 1901
Haydn, [J.]... ... *Dictionary of Dates* ... ... 22nd Ed. 1898
Hollander, B. ... *The Mental Functions of the Brain* 1901
Hughes, A. W.... *Practical Anatomy.* Part II. (Ed. and completed by A. Keith) 1902
Medical Tracts ... ... [V.D.]
Murray, W. ... *Rough Notes on Remedies* ... ... 4th Ed. 1901
Neff, M. L.... ... *Prescription Writing* 1901
Osler, W. ... ... *The Principles and Practice of Medicine* ... 4th Ed. 1901
Parsons, J. H. ... *Elementary Ophthalmic Optics* 1901
Pasteur, The Life of. By R. Vallery-Radot. (Tr. by Mrs R. L. Devonshire) 2 vols. 1902
Physic and Physicians. 2 vols.... ... ... (2) 1839
Pye, W. ... ... *Elementary Bandaging and Surgical Dressing.* 9th Ed. (Ed. by T. Carwardine) 1901
Rotch, T. M. ... *Pediatrics* ... ... 3rd Ed. 1901
Selected Essays and Monographs—English 1901
Semon, Sir F. ... *Diseases of the Upper Air Passages* 1902
Stirling, W. ... *Outlines of Practical Physiology* ... ... 4th Ed. 1902
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MEETINGS OF SOCIETIES.

Bristol Medico-Chirurgical Society.

December 11th, 1901.

Dr. BARCLAY J. BARON, President, in the Chair.

Dr. J. O. SYMES showed microscopic preparations of the blood from a patient suffering from **malignant (æstivo-autumnal) tertian fever**, who had been under the care of Dr. Skerritt. Crescentic and ovoid bodies were numerous, the smaller intra-corpuscular plasmodia being rare.—Dr. NEWMAN NEILD showed

specimens of the **malarial parasite obtained from a case of tertian ague.** They illustrated two stages in the development of the organism.

Dr. MICHELL CLARKE showed three patients. The first was a man, aged 42, with **amyotrophic lateral sclerosis.** He had had syphilis eight years ago, which had been thoroughly treated, but no other illness. The disease had begun nine months previously with the development of weakness in the left shoulder and dull pains there, and weakness in the neck muscles. For five months he had also had weakness of the legs. At the present time there was wasting of the following muscles: both great pectorals, but especially the left; the left deltoid and biceps; the trapezii in their lower two-thirds; and the supra- and infra-spinati. In all wasting was mostly on the left side. Slighter wasting was also obvious in the upper part of the left trapezius and the small muscles of the right thumb. The faradic reactions were lessened and the galvanic increased in all the wasted muscles, and the reaction of degeneration was yielded by the muscles which were most wasted, and fibrillary tremors were noticed in them. The knee-jerks were exaggerated, and Babinski's sign was present. The patient was improving under treatment with rest, galvanism, and hypodermic injections of strychnine. The second patient, a man of 61, was suffering from a **vascular lesion of the pons (hemorrhagic).** Two years ago he had had paralysis of the right third nerve, from which he had recovered. Four weeks previously he fell down, vomited, and had vertigo, and could not raise himself. This attack left him with absolute loss of power of swallowing; right hemianæsthesia, which was partial only, pain being chiefly affected, and was limited by the middle line; paresis of the left sixth nerve with diplopia; slight left ptosis; paresis of the left fifth nerve in its motor division; loss of taste in the anterior two-thirds of the tongue on the right side; paresis of the left seventh nerve and of the right vocal cord; and absence of the right knee-jerk. The pupils, tongue, and the senses of sight, smell, and hearing were normal. The patient had regained the power of swallowing in three weeks, and recovered the lost knee-jerk and from his loss of sensation. The third case, a man of 26, had **hereditary or family cerebellar ataxy.** The symptoms had been present six months. The patient's brother had been affected with similar symptoms for one year. Dr. Clarke also showed a specimen of **necrosis and exfoliation of the arytenoid cartilages,** which had followed enteric fever.—Mr. C. H. WALKER said that he had seen the second patient at the Eye Hospital, when he had paralysis of the right third nerve. When the patient had almost recovered from that, under iodide of potassium, paresis of the left sixth nerve had developed.—Dr. F. H. EDGEWORTH mentioned the case of a patient who developed right hemiplegia three months after getting syphilis. In spite of mercury, three weeks later left hemiplegia developed, and then swallowing became impossible,

though it had been unaffected by the first attack.—Dr. MICHELL CLARKE, in replying, said that most physicians differentiated progressive muscular atrophy from amyotrophic lateral sclerosis, and considered the former a disease confined to the lower neurons, whereas in the latter both upper and lower neurons were affected.

Mr. J. PAUL BUSH, C.M.G., read a paper on **a case of gastro-jejunostomy** (see p. 57).—Dr. SHAW, under whose care the patient had been in the first instance, commented upon the satisfactory immediate results of the operation, and alluded to the difficulty of early diagnosis in this disease, and to the fact that patients were often unwilling to undergo the operation. —Mr. C. A. MORTON favoured the posterior method of gastro-jejunostomy. He thought that in the anterior method the functions of the jejunum were more in danger of being interfered with by distension of the colon, than were the functions of the colon by the pressure of the displaced coil of jejunum. He had not found the posterior method more difficult than the anterior, as it was alleged to be. In one case he had used Mayo Robson's bone-bobbin, which he was getting to like for this and other operations. The jejunum in the operation naturally came into such a position that its peristalsis was in the same direction as that of the stomach, and it would be more difficult to fix it so as to reverse the direction of the peristalsis. —Mr. R. G. P. LANSDOWN alluded to a case in which he had performed the operation by the anterior method with very satisfactory results. The stomach in that case had been so fixed that the posterior method was impracticable. The patient, like Mr. Bush's, had been remarkably benefited for six months, and had only begun to lose ground again during the last few days.—Dr. MICHELL CLARKE pointed out that even if physicians were able to make an early diagnosis they would not always get the opportunity, because patients would still often come for treatment when the disease was advanced.—Dr. GROVES cited the results Mayo Robson had obtained in the operation. The most brilliant results had been in cases of gastric ulcer. Some cases which were supposed to be malignant had proved at the operation not to be malignant, and had been permanently benefited, which was a point in favour of operating. The posterior operation was more difficult to perform on the cadaver than the anterior.

Mr. A. W. PRICHARD read notes on **a case of acute intussusception**. The patient was a very young child. At the time of operation, about six hours after the onset of the symptoms, the pulse was uncountable. There was resistance in the left flank and a rectal swelling palpable. Median laparotomy was performed and the intussusception reduced. On the second day there was some collapse. A good recovery ensued and the patient was shown at the meeting.—Mr. J. LACY FIRTH alluded

to three cases of acute intussusception in very young children for which he had opened the abdomen. The patients had recovered. The third of these patients was in a desperate state at the time of the operation, with fæcal vomiting, a wretched pulse, and protrusion of an ileo-cæcal intussusception three inches beyond the anus. He thought it was better on the whole, even when the symptoms were mild, to perform laparotomy for intussusception as soon as the diagnosis was made, rather than to try inflation.—Mr. PAUL BUSH preferred to treat these cases by laparotomy. The injection treatment often failed to reduce the intussusception completely, and owing to the possibility of rupturing the bowel, laparotomy was really a safer procedure.

Mr. F. H. ROSE read a paper on **ethyl chloride as a general anæsthetic** (*vide* p. 53).—Dr. J. O. SYMES was not convinced that ethyl chloride yielded any better results than nitrous oxide gas. It seemed to take a little longer to anæsthetize the patient than with gas. The period of excitement which it produced, the occasional vomiting, and the fact that there had been a death under it in the first 2,000 administrations were points against it. Anæsthesia lasting a minute and a half was usually enough for a throat operation, but fifty seconds seemed as much as ethyl chloride could be relied upon to give.—Dr. ELWIN HARRIS considered that it often failed to produce anæsthesia. The patients often yelled loudly during the administration. There was much want of uniformity in its action. On one or two occasions the patients had become dusky. He did not think that this anæsthetic could be recommended at present.—Mr. F. H. ROSE in reply said that sometimes he had anæsthetized the patient in thirty seconds, at other times it had taken from five to six minutes. Some patients had not struggled, others had. The duration of anæsthesia was distinctly longer than that under nitrous oxide gas.

January 8th, 1902.

Dr. BARCLAY J. BARON, President, in the Chair.

Mr. C. King Rudge was elected a member of the Library Committee in the place of Mr. L. M. Griffiths, resigned.

Mr. DOBSON proposed that the Society should give a special vote of thanks to the retiring librarian, Mr. L. M. Griffiths. For eleven years Mr. Griffiths had devoted a vast amount of time and labour to the library, and he had been a member of the Committee of the Society from its foundation. The state of the library sufficiently demonstrated the great industry of the late librarian.

Dr. SHINGLETON SMITH seconded the resolution, and expressed

admiration for Mr. Griffiths' work, and regret that it was now necessary to accept his resignation.

The resolution was cordially carried.

Mr. F. W. CROSSMAN showed a **patient with a loud aortic murmur.** The patient's brother had been attended for a similar affection. Mr. Crossman thought the cause was probably the same in each case; viz., a partial rupture of the valve from a sudden strain.—Dr. THEODORE FISHER thought musical murmurs were usually mitral, and asked what was the evidence of this one being aortic.—Dr. WATSON WILLIAMS pointed out that the second aortic sound was lost and replaced by the bruit in this case.—Dr. CAVE mentioned a case in which a similar murmur developed after a strain from lifting a piano. In that case the murmur was audible two feet away from the patient.—Dr. STACK thought that mitral bruits were not audible away from the body.—Dr. MICHELL CLARK said that the murmurs heard at a distance were not always the loudest, they were often of medium intensity. He alluded to the audibility of a tapping sound which could be heard with each heart beat in some aortic cases by auscultation over arteries; often in the dorsalis pedis even.—Dr. HARRISON thought it was the musical as distinguished from the noisy quality of a murmur which rendered it audible away from the body.—Dr. NEWMAN NEILD mentioned a case of phthisis in which a cardio-pulmonary bruit had been audible at a distance of five inches from the patient. It had been distinct when the patient was standing, but absent when he was lying down.

Mr. G. MUNRO SMITH showed the following cases and specimens: (1) **A patient from whom he had removed practically the entire clavicle,** which had necrosed. In spite of the absence of the bone, which had not re-formed, the patient could move the arm on the affected side as strongly and completely as on the sound side. (2) **Two large renal calculi,** weighing together 462 grains, which he had successfully removed from a kidney. Twenty-seven minute calculi were passed at intervals in the three weeks immediately following the operation. (3) A specimen of **tonsillar calculus.** (4) **A concretion from the intestines of a horse** which had caused the animal's death. Though so stony in appearance the microscope showed it was entirely of vegetable structure.—Mr. HANCOCKE WATHEN showed several **enteroliths obtained from horses,** and discussed their causation.—Dr. KENNETH WILLS mentioned a tonsillar calculus he had seen which a patient had coughed up. Its nucleus was a medicinal pill.

Dr. STACK showed a specimen of **a ruptured intracranial carotid aneurysm** from a case of Dr. Shaw's. The patient, aged 22, had a basal cardiac bruit, slight displacement outwards of the cardiac apex, and double optic neuritis with much swelling of the disc. The diagnosis of a cerebral tumour with hemor-

rhage into it had been entertained. No cause for the aneurysm had been discovered. There was no renal disease or endocarditis.

Dr. THEODORE FISHER showed a specimen of **acute tuberculosis of the lung**, obtained from a patient whose abdomen showed abundant intestinal adhesions, the result of old and obsolete tubercular peritonitis.

Dr. F. H. EDGEWORTH read a paper on **Transient Renal Hæmaturia** due to chill. Notes were given of three cases. In each after a definite exposure to cold the urine became deeply blood-stained, and blood casts were abundant. On the second day the blood and urine diminished in quantity. In one of the cases at least recurrence of similar attacks had been noticed. It was important to consider the relation of the affection to acute Bright's disease. The short duration, the complete and rapid recovery, and the recurrence of this affection distinguished it from Bright's disease.—Dr. SHINGLETON SMITH thought the disease was really acute Bright's disease, in which the early and free hemorrhage favourably influenced the course and duration of that affection.—Mr. ROGER WILLIAMS alluded to the advances which had been made in the diagnosis of renal affections, for he remembered the time when renal calculus and tubercular disease of the kidney were rarely diagnosed. The explanation of some cases of hemorrhage from the kidney was to be found in the existence of villous growths in the renal pelvis or ureter.—Dr. MICHELL CLARKE spoke of the great utility of the electrical centrifuge in examining the urine for casts. Without the use of this instrument existing evidences of Bright's disease might easily be overlooked.—Dr. EDGEWORTH could hardly believe that Bright's disease could frequently recur, leaving the kidney quite healthy in the intervals, as happened in some of these cases.

Dr. J. ODERY SYMES read a paper on "**some urinary infections, with special reference to their treatment by urotropine**" (*vide* p. 27).—Mr. CARWARDINE alluded to the difficulty of obtaining urine from the bladder without contaminating it. He had found urotropine more effective in the cases in which the urine was alkaline. It made such urine acid. He had used it as a prophylactic against urethral fever. If formaline was liberated in the nascent state in the urine by the decomposition of urotropine, it would be more powerful even than usually.—Dr. FISHER stated that in a research at the Johns Hopkins University pyuria had been found to exist in ten per cent. of a number of cases of typhoid fever, and this percentage corresponded with the percentage of typhoid cases in which Dr. Symes had found bacilli in the urine.—Dr. NEILD emphasized the importance of a dose of the drug being taken the last thing at night, owing to the fact that it was rapidly excreted. Phosphate crystals in acid urine were found after the drug had been given.—Dr. CAVE

mentioned that he had twice seen hæmaturia produced by the drug, and others had reported it. In one of his cases the hemorrhage had been alarming.—Dr. STACK advocated using the drug in typhoid cases.—Dr. EDGEWORTH spoke of the great value of the drug in some cases of enlarged prostate. By its aid the beginning of catheter-life might be postponed.—Dr. SYMES replied that he had given urotropine in a score of cases and had not seen hæmaturia produced. It was not broken up in urine which escaped from the kidneys in an alkaline condition.

Dr. D. S. DAVIES read notes on the case of a seaman who had **variola nigra.** (*See* p. 49.)

February 12th, 1902.

Dr. BARCLAY J. BARON, President, in the Chair.

Dr. G. PARKER showed a case of **chromidrosis.**—Dr. STACK said they must have admitted six or seven cases like the one shown into the Infirmary in recent years. The blue discolouration had only been between the toes, and had disappeared after maintaining cleanliness for some time.—Dr. OGILVY alluded to a case he had seen in Dublin, shown and described by Dr. Foote, in which the discolouration was around the eyes and gave the patient the appearance of having spectacles on. This pigment could be rubbed off, leaving white skin beneath, but returned again in about half an hour.—Dr. PARKER replied that he had tried to remove the blue stains between the toes in this case with chloroform, ether, soap, paraffin, and other things, but had failed. Wearing white socks had not changed it.

Dr. A. OGILVY showed a case of **double macular coloboma with persistent hyaloid arteries.** He thought no other case had been described in which the artery persisted in part in both eyes. The coloboma much impaired the vision of the right eye; but the patient could read, having educated another part of the retina.—Mr. C. H. WALKER said the case was a very rare one. He thought the persistent portion of the arteries was not more than a few millimetres long. He agreed that the other patch was a congenital defect. Such patches were nearly always met with in myopic eyes.

Dr. J. ODERY SYMES showed two brothers suffering from **idiopathic muscular atrophy.** In both the wasting had begun at ten years of age.

Mr. W. H. HARSANT showed a specimen of **otitic cerebellar abscess.** The patient had been ill three weeks when the

speaker first saw him in consultation. He had had occipital headache of severe type on one side, and was not said to have ear disease. On enquiry and examination, however, there was found to be a distinct history of otitis three years previously and perforation of the membrana tympani. He was admitted to the Infirmary. Slow cerebration with dulness and apathy was noticeable. The boy would lie quiet all day and resent disturbance, and did not want food. The speaker had not been able to decide whether the brain abscess he expected to exist was in the cerebrum or cerebellum, and had put off the operation for a day, which he now much regretted, for the next day the boy died quite suddenly. There had been no paresis nor optic neuritis, and no elevation of the temperature, and the pulse had been about normal. Giddiness had not been tested by getting the patient up, owing to his weakness.—Dr. EDGEWORTH thought the reason there were no localising symptoms was that the abscess, as the specimen showed, was in the posterior part of the cerebellum.—Mr. J. LACY FIRTH said he had to regret having some years ago overlooked the existence of a cerebellar abscess, which had also suddenly killed the patient. The patient had been treated for lateral sinus thrombosis with signs of pyæmic abscesses in the lungs, including fœtid and hemorrhagic expectoration, by the radical mastoid operation, obliteration of the left sigmoid sinus and tying the jugular vein. The patient gradually improved, until at the end of six weeks he was getting about the ward and was considered convalescent. After being up a few days, he died suddenly. Reflection after the event led the speaker to think he had perhaps mistaken sluggish cerebration for deafness.—Mr. HARSANT stated his doubt had been as to the cerebellar or cerebral position of the abscess. Cholesteatomatous material had been found in the temporal bone.

Mr. PAUL BUSH showed a **gangrenous ovary (due to torsion) and fimbriated extremity of a Fallopian tube** he had removed from an inguinal sac in an infant, six months of age, with symptoms of strangulated hernia. The child had been ill four days. There was left iliac pain and a swollen left labium, the appearances being those of an ordinary strangulated hernia. The patient recovered. —Mr. ROGER WILLIAMS remarked that the presence of an ovary in the sac of a hernia was not so rare as had been supposed. Many of such hernias were of the congenital type, and due to developmental errors especially affecting the formation of the round and ovarian ligaments. In several cases testicles had been mistaken for ovaries in these cases; and in these cases the external organs of generation had been rudimentary, and the patients had on that account been mistaken for females. Microscopic examination should be made in such cases to settle the nature of the removed body. — Dr. W. SWAYNE considered there was no possibility of the present body being anything but an ovary. The fimbriated end of the tube was

quite distinct.—Mr. BUSH replied to the same effect, and said that the external generative organs were those of a female.

Dr. G. PARKER showed a specimen of **tumour of the brain** and detailed the symptoms in the case.

Dr. W. H. GROVES read a paper on a case of **uterine fibroids in which the uterus had been removed two years after double ovariotomy.** Points of special interest in the case were that twelve months after the oöphorectomy and removal of the Fallopian tubes, during which period there had been complete amenorrhœa, the catamenia came on again and recurred at intervals of two or three weeks, and that the fibroid increased in size. The uterus was removed by the abdominal route, supravaginally, and with intra-peritoneal treatment of the stump. A good recovery followed. The speaker discussed the results of oöphorectomy and hysterectomy in the treatment of uterine fibroids. He alluded to some published results in which fifty cases had been followed up after oöphorectomy. In eighteen of these the fibroids had not been benefited. The operation had been largely given up in favour of hysterectomy, owing to the uncertain results of the former and the greatly increased safety of the latter operation due to improved technique.—Mr. ROGER WILLIAMS said that the operation of oöphorectomy for the disease in question originated from misconception. It illustrated to what a degree second-hand ideas existed in the profession. The procedure was based on the supposed beneficial effects of the menopause. Lawson Tait, finding the results of removing the ovaries only were very uncertain, began to remove the tubes also, and then obtained better results, and so came to attribute the beneficial effects to removal of the tubes rather than to removal of the ovaries. Probably the benefits gained by these operations were attributable to diminution of the vascular supply of the tumours.—Dr. WALTER SWAYNE stated that for the last ten years he had watched several cases of myomata in women who passed the menopause, but in none of these had he found the tumour diminished in size. Ligature of the uterine arteries had benefited some recorded cases. From the specimen, he thought the uterus might have been removed by the vaginal route.—Dr. GROVES, in replying, said that he had expected to find oöphorectomy more strongly defended in the debate. In 1897 it had been estimated that 80 per cent. of the cases operated on were benefited by oöphorectomy. He was satisfied that the ovaries had been completely removed in his case.

Dr. BERTRAM ROGERS showed a specimen of **cirrhosis of the liver,** removed from the body of a child, and read the clinical and *post-mortem* notes of the case. The child had for a long period been given beer to drink by his parents. The cirrhosis was considered to be alcoholic. Shortly before death a large

collection of ascitic fluid (119 oz.) was removed by tapping. The child died after a copious hæmatemesis. The liver had become firmly adherent to the diaphgram. Its surface was markedly lobulated.—Dr. THEODORE FISHER had regarded the case as one of syphilitic cirrhosis of the liver.—Dr. STACK, from inspection of the specimen, agreed with the view that the liver was a syphilitic one. He had collected thirty cases of cirrhosis of the liver in children for his thesis some time ago. Those due to alcohol were of small, even type. Beer had never produced it, but whisky and gin had.

J. LACY FIRTH,
Reporter.

J. PAUL BUSH,
Hon. Sec.

Local Medical Notes.

University College, Bristol.—Dr. Walter C. Swayne has been appointed Professor of Midwifery. Mr. D. C. Rayner, F.R.C.S., has been appointed Lecturer on Practical Midwifery. In the recent M.D. Examination of the University of London, A. S. Cobbledick, B.S., M.R.C.S., was a successful candidate. Mr. P. White has obtained the M.R.C.S. and L.R.C.P. Diplomas. Mr. H. James has been appointed House Surgeon to the Swansea Hospital.

Bristol Royal Infirmary.—E. M. Pearse, M.R.C.S., L.R.C.P., has been appointed Resident Obstetric Officer, and J. C. Clayton, M.R.C.S., L.R.C.P., Junior House Surgeon and Anæsthetist.

Bristol General Hospital.—C. F. Pickering, F.R.C.S., has been appointed Consulting Surgeon, J. Lacy Firth, M.D., M.S., F.R.C.S., Surgeon, and H. Greville Kyle, B.A., M.B., B.Ch. (Oxon), Assistant Surgeon to the Bristol General Hospital.

Royal United Hospital, Bath.—George Henry Terry, F.R.C.S. Ed., and Frederick Lace, F.R.C.S. Eng., have been appointed Honorary Surgeons, and Harry Lurgan Brownlow, F.R.C.S. Eng., and William H. Cooke, F.R.C.S. Ed., Honorary Assistant-Surgeons, to the Royal United Hospital, Bath.

Bristol Dispensary.—The annual report for 1901 of this charitable institution is to hand. It shows that there has been an increase in the number of patients treated above that of last year. During the summer months the Medical Officers had to contend with a severe epidemic of diphtheria, happily with few deaths. The Committee had to deplore the great lack of fresh subscribers to the institution. The Bedminster Branch was continuing to do very good work, and the number of patients treated there was steadily increasing. For this reason the Committee would be grateful for new subscriptions

THE NEW VICTORIA HOSPITAL, FROME.

from persons carrying on business in that district. It was with much regret that the Committee had to record the death of one of their number, Mr. Edward Stock, who had been associated with the institution for over thirty-four years.

Bristol Victoria Jubilee Convalescent Home.—Another munificent gift to this institution was announced in the Bristol daily papers of January 20th, 1902. It will be remembered that the Lord Mayor in October last remitted to the Treasurer the sum of £4,115 4s., the amount of donations to the local Queen Victoria Memorial Fund. To this has now been added the generous donation of Mr. P. H. Vaughan of ten thousand pounds for the purpose of endowing ten free beds. As a result of these donations the governors are now able to receive an additional fourteen patients without payment, and to take other suitable patients at a reduced charge of ten shillings per week.

The Secretaries report that during the last year 1,017 patients have been admitted into the Home, and that in almost every case they derived much benefit: they report that there has been a gain in weight amounting to an average of three pounds for each patient, as the result of residence in the Home.

FROME.

The New Victoria Hospital and Home for Trained Nurses.—This was opened by the Hon. Mrs. Duckworth, of Orchardleigh Park, on the 12th September, 1901. There was a public ceremony.

The architecture is of the domestic type; the building of local stone, with coigns and window-dressings of Bath freestone.

The administrative department is in the centre: the wards, with accommodation for sixteen patients, on the left, and the nurses' home on the right. The operating theatre is in the rear of the building. It is provided with excellent light from the north and from a skylight. A counterbalance pendant of incandescent light, with two C-burners, is swung over the head of the operating table. On the ground floor, on the south side, there is an open space, roofed over with glass, where convalescents and patients able to get out can sit in the open air. It is intended that a communication shall be made between this and the adjoining public recreation park, which patients may enter by a private gateway.

The wards are spacious, well-lighted and ventilated. Each has a w.c. and lavatory, fitted up with the most modern sanitary appliances, placed at the far end of the ward, the arrangement separated off by a small cross-ventilated space.

The heating apparatus is placed in the basement. There are two systems: one for heating the baths and lavatories—the other for heating the building, with radiators placed in the wards, operating theatre and passages. There are three bath-rooms, one on each floor for the patients and one in the nurses' home.

The system of drainage is of the most modern type. Gas is completely laid on throughout the building.

The hospital with the ground area covers half an acre. The laundry and mortuary is a detached building at the rear. The space not occupied by buildings is being tastefully laid out under the direction of Mr. Alfred Parsons, A.R.A.

The architect of the building is Mr. J. Vaughan Johnson, of London.

Yours sincerely
E. Long Fox